EDITORIAL
DOMESTIC ENGINEERING

Whole No. 1542 CHICAGO JULY 1, 1922 Vol. 100, No. 1

DO IT WITH A SMILE.

TO give grudgingly is really not to give, but to have taken away. It is of little value to a firm to advertise superior service unless that service is given gladly, given with a smile. Some time ago a man came into a large hardware store in a moderate sized city in Wisconsin with a thermos bottle that he had purchased there a few days before. He wished the bottle exchanged on the grounds that the glass interior was cracked when he bought it. He knew better, and so did the dealer, but the latter instead of trying to prove this to the customer and getting his customer and himself into an unhappy frame of mind, simply said that he was very sorry it happened and gave him a new bottle, and he did it with a smile. It may not always be the part of wisdom to yield to the customer as in this case, but the important thing is to decide quickly and firmly and then whatever action is decided on to do it as pleasantly as possible. In the case of a plumbing and heating contractor, if a customer claims that something he has installed is defective, it is up to the contractor to decide quickly what he will do and do it as though it was a pleasure rather than grudgingly. Anything given, done with a scowl, might often as well not be done at all. The smile costs nothing, but it is a wonderful good will builder.

BEING "BUSINESS POOR."

NOT so long ago the description, "land poor," was frequently heard, in fact, it is not entirely out of vogue yet, and in the cities the expression, "real estate poor," is often used to describe the condition of a person who has more real estate than he is able to manage properly. Likewise it is possible for a contractor to go after and get more business and more jobs than he has money to finance or organization to handle efficiently. When a contractor takes so much work that it begins to drive him rather than permit him to drive the work, he is getting himself into a position where a sudden change in general business conditions may bring the whole thing tumbling about his ears; or, if he does succeed in scrambling out of the wreckage, come out with far less profit than he would have with one-half the jobs properly financed and efficiently handled.

There are a great many contractors just now in various parts of the United States that have a great deal of business on the books, some of it well under way. Many of them have sufficient financial resources to carry them through even if the breaks go against them, and they also have an organization that is prepared to handle the work efficiently. Many of them also know pretty well where they stand at all times. They have an accounting system which furnishes them with this information frequently and accurately. For those not similarly prepared, it might be the part of wisdom to do a little checking up at this time and see just where they stand. They may find that owing to the great amount of business under way and their inability to look after the details personally, that on some of the jobs, particularly those that were figured on a pretty close margin, they stand to lose unless given more careful supervision. After all it isn't the amount of business done that counts, but it is the amount that is handled so efficiently that it will show a good profit when the final reckoning is made. Waiting until the jobs are completed to figure what profit there is in them may prove too late. When a contractor gets so much business that it begins to run him, he is becoming "business poor" and has only a gambler's chance that the final results will show substantial figures on the right side of the ledger. It would be a wise move to stop and do a little checking now, even if it involves the employment of an expert accountant to go over the books.

ABOUT SEVERAL THINGS.

WE are living in a remarkable age. What is nothing but a wild dream today is an accomplished fact tomorrow. Only a short time ago there were few people who would believe that wireless telephony was a possibility, but during the past six months "radio" has become a craze. The President may speak in the White House and be heard in every part of the United States. Health bulletins are broadcasted from New York City and received in every city and hamlet from the Atlantic to the Pacific. Children everywhere operate and even make the receiving sets, which moves us to say with the farmer that "the world sure do move."

* * *

Great prosperity and great production are inseparable, and great production in the United States has followed important steps in the elimination of waste. There have been eras when machinery replaced manual labor on a large scale, when by-products were made from what would otherwise have been discarded, when the cost in time and money for transporting goods was greatly reduced through remarkable developments of railroads; and now, according to E. W. McCullough, manager of the Fabricated Production Department of the National Chamber of Commerce, the big step that will make for an era of great production will be standardization. It will come sooner or later in the plumbing and heating industry; so we may as well prepare for it now.

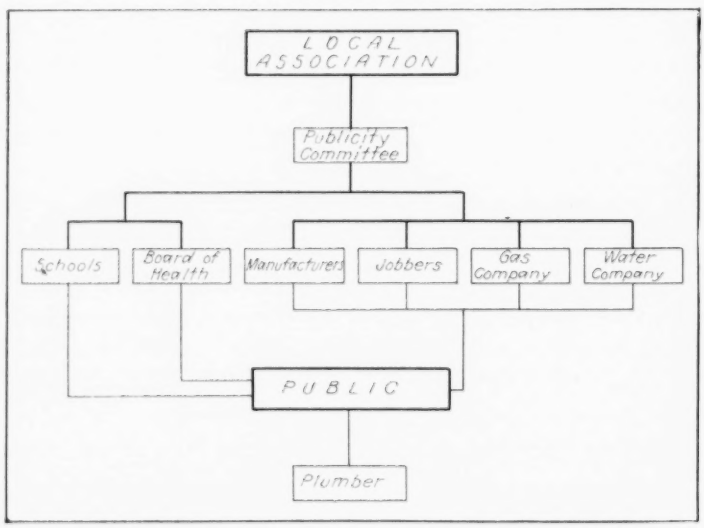
CO-OPERATION IS *the* LIFE *of* TRADE

The Value of a Long Pull, and a Strong Pull, and a Pull All Together, and Some of the People Who Are Doing the Pulling

SOMEWHERE there is a story about two bitter business rivals. They occupied opposite corners, and they fought each other year in and year out. They were a pair of business knockers, whose knocking really knocked nobody but themselves. Then, in the midst of the fighting, the son of one of the dealers eloped with and married the daughter of the other dealer. The two dealers raved and smote the air with words loud and strong. But, so the story goes, the families now being related, the bitterness grew less, and out of it all the fathers learned a lesson in co-operation. And this co-operation resulted in a larger and a better business for each of the rival dealers.

At the time of the elopement, which was not so long ago, it was the common thought that competition was the life of trade. Today we know better. Today we know that the life of trade is co-operation.

Whether or not we think about it, all of us are all the time co-operating more or less. We have to co-operate. No man, or company, can live long or go far alone. Standing alone the best of us are "pretty small potatoes," as the saying is; but united and pulling together we can do almost anything we make up our minds to do. It is this thought that has given rise to the oft-quoted expressions, "In union there is strength," "United we stand, divided we fall," "We must hang together or we will hang separately," and other words of like meaning.



This Chart Makes Plain the Workings of a Co-operative Plan for a Bath a Day Campaign or a Distribution of "The Story of the Bath." The Local Master Plumbers' Association, Working Through Its Publicity Committee, Interests the Schools and the Board of Health, and They, in Turn, Help to Interest the Public. The Publicity Committee Also Solicits the Co-operation of Manufacturers, Jobbers, and the Gas and Water Companies in the Purchase of Booklets, Stickers, Signs and the Like. All of This Co-operation Further Interests the Public, and This Interest Leads People to the Plumber, Who Does the Work and Adds to His Profits.

Then and Now.

In the days when men thought that competition was the life of trade, firms in the same line of trade located on different streets. Now, when we know that co-operation is the life of trade, firms get as close to each other as they can. Then business rivals avoided each other; now they hold conferences. Then each man paddled his own canoe, and hard paddling it was; now they all paddle together, which makes the paddling easier and speeds forward the boat of business.

Co-operation grows, like all good things grow, and today we find business and professional men pulling together everywhere. This is true in the plumbing and heating fields as well as in other fields.

Looking about over the country it is easy to see a vast amount of co-operation going on inside the plumbing field. And it is just as easy to see the hands of the plumbing industry reaching out to other industries, and they, in turn, reaching their hands back to plumbing. In other words, if you understand what's in our mind, plumbing interests are helping other interests and other interests are helping plumbing interests.

Portland Co-operation.

A good example of co-operation is now under way in Portland, Oregon. Charles Fullman, chairman of the publicity committee of the Portland Master Plumbers' Association, started the co-operative idea, and he and his committee have carried it through to success. Mr. Fullman secured the endorsement of the association, and then got busy. The members of the association were canvassed, and so were the local jobbers and manufacturers of plumbing goods, and so was the Portland Gas Company. The schools were not touched. They are being left until the beginning of the new school year next September.

The canvass netted forty-three firms, all of which agreed to join the Bath a Day movement. Perhaps you would like to know the names of the firms. Here they are:

C. C. McCoy, R. D. Rennie, M. L. Kline Company, The Peerless Pacific Company, Jacobsen-Munroe Company, Walworth Company of Oregon, Alaska Plumbing & Heating Company, The Bailey-Sigler Company, Connolly & Wise, Fox & Company, L. M. Myers, Stephen Pollitt, Theo. Roy, Ruedy Brothers, Schade Brothers, Harry Woodhouse, Alberta Plumbing Company, F. C. Anspach, E. R. Bradbury, F. F. Burfitt, Beard Brothers, Coffey Plumbing Company, De Temple Company, Finnigan & Williams, Charles Fullman, C. J. Kelly, E. R. Edwards, Kendall Plumbing & Heating Company, Muirhead & Murhard Company, J. B. Nicholl, John H. Pederson, Portland Plumbing & Heating Company, T. J. Rowe, A. J. Roy, Rushlight and Hastorf, Schultz Brothers, Otto Schulz, J. F. Shea, E. H. Sutton, T. Spreadborough, Rex L. Walker, J. R. Widmer, Portland Gas & Coke Company.

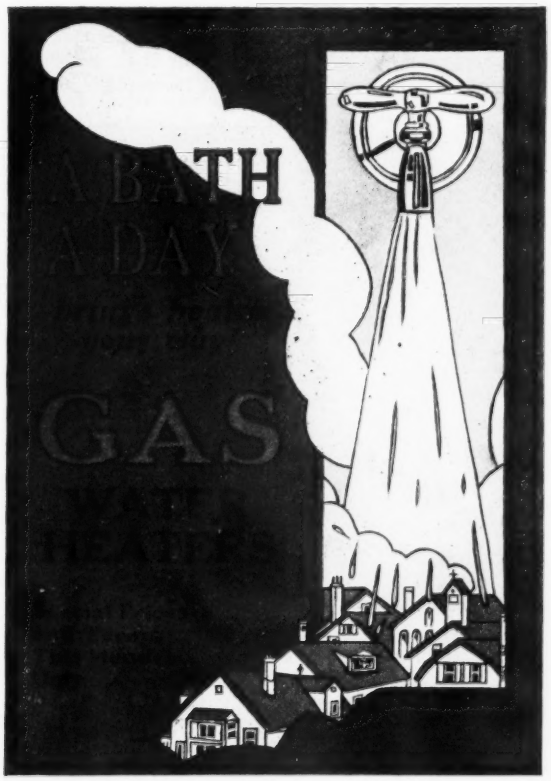
Thus forty-three subscribed for copies of "The Story of

the Bath," for Bath a Day stickers, and for Bath a Day signs to be used on windows and trucks. Through this co-operation all secured the low rate of 7½ cents per copy for "The Story of the Bath," and, in addition, each subscriber got his name printed on the back cover page of the copies he subscribed for without extra charge.

All of the Bath a Day helps were shipped at one time, and all of the co-operators began their use on the same date. They will do some good newspaper advertising, and will, in every way possible, keep the gospel of more frequent bathing singing in the ears of the people of Portland. Isn't that good co-operation? And isn't it the way to do the largest good for the smallest outlay of money?

Gas and Water Co-Operation.

Gas and water companies know that they and the plumbers are headed the same way; that what is of interest and value to one is of interest and value to all; that more sales can



A Window Card, Printed in Three Colors, that is Being Used this Summer by a Number of Gas Companies.

be made by pulling together than by pulling apart. They know that, and because they know it they are ever ready to co-operate. They joined the co-operative movement at Portland and they will join other co-operative movements. Where men still think that competition and not co-operation is the life of trade, the gas and water companies take up the Bath a Day movement on their own accounts. So, if you non-co-operators, wherever you may be, wake up some fine morning to find a Bath a Day stuck all over your towns, and if Willie or Mary comes home from school and ask you questions about bathing that you can't answer, don't be surprised. And, above all things, don't roar about the rich gas and water companies growing richer. It is this kind of education, plus publicity, plus co-operation, that causes any company to grow rich. If a plumber is not willing to help himself he should not object if someone else takes his unused thunder and turns it into cash.

Passaic Co-Operation.

Going from Portland to the other side of the country, we discover something a bit out of the ordinary at Passaic, in New Jersey. Through the National "Clean Up and Paint Up" Campaign Bureau, the city of Passaic organized a local

A modern bathroom is an investment in health and happiness that the whole family will draw dividends from—

Talk it over with your Plumber today.

A Sample of the Lines Used on the Monthly Bills of the Beloit Water, Gas & Electric Co., at Beloit, Wis.

committee that appealed to civic pride. This committee decided to campaign Passaic to clean up and paint up during the week of May the eighth.

Now the master plumbers of Passaic could have stayed out of the clean up week. They could have said, "What have we to do with cleaning the front yards and the back yards, and the streets and the alleys, and making the city better and brighter and more beautiful?" Yes, they could have said that, or something like it. But they didn't say it. The plumbers of Passaic are not that kind. They are co-operators. And so to the question, "Will you join the clean up campaign?" they answered, "Just watch us."

Passiac answered the call forty-six strong—just a wee bit stronger than Portland. Here they are, officers and members: Thomas M. James, Joseph Keivett, Harry Krakowitz, Charles Klugman, Abe Koolick, Bernard Leitchenberg, Michael J. Lyons, Charles Danko, A. Hoefflinger, J. D. Halstead, Joseph Krak, Abe Rachels, Peter Tiziani, Roy J. Schleich, Thos. Wasniewski, Arnold Arts, C. Vander Vliet, Fred Margeit, Albert Auslander, John J. Holden, Peter Looi, James J. Faulkner, George Van Varick, George Muller, Jacob Madison, Thomas J. Nolan, Harry Pruzansky, Jacob Pontier, Simon Roosma, Samuel Schneider, Louis Schneider, Barney Steinberg, Stephen Salko, I. Weinstein, Jacob Weigel, John Belli, Thomas F. Cannon, M. Joseph Derricks, Geo. S. Aldous, R. W. Burrell, I. Choler, John Collins, Wm. Doremus, Sam. Greenberger, Leonard Hole, Abe Levenson.

Led by George S. Aldous, chairman of the publicity committee, the Passaic Master Plumbers' Association not only joined in the campaign, but before the end of the week it became a leader. The association took large space

"A Bath a Day Keeps You Fit Every Way."

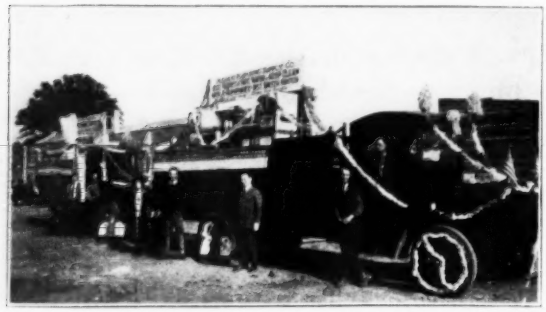
See your Plumber about that new bathroom today.

Another Sample of the Lines Used on the Monthly Bills of the Beloit Water, Gas & Electric Co., at Beloit, Wis.

in the newspapers, changing its advertising copy every day. This advertising sold the public the worth of the plumber to the community; it sold the value of more frequent bathing; it sold one bathroom to every two bedrooms. But that was not all. The association placed "The Story of the Bath" in the schools, where it is used as supplementary reading. To be in keeping with the week the Bath a Day

slogan was changed to read, "A Bath a Day Keeps You Clean Every Way." There is nothing like being in the spirit of things, is there?

To end the week as such a week should be ended, on Saturday afternoon the Master Plumbers' Association pa-



One of the Floats Seen in the Plumbers' Day Parade that Closed "Clean Up" Week at Passaic, N. J.

raded through the streets of Passaic, and in the evening of the same day they sat down to a dinner at a leading hotel. Supply men, plumbing inspectors and others were the guests of the association. The parade was led by a band, and every few feet there appeared an appropriate float or an attractive display.

That is another kind of co-operation, different from Portland, but just as resultful. The co-operation at Portland worked from the inside of the plumbing and gas industries out to the public and then back to plumbing and gas to be cashed. The co-operation at Passaic came from an outside source to plumbing, was picked up by the association, spread before the public, and then returned to be counted in dollars and cents by the master plumbers. Both methods--any method of co-operation—are good. Which is the better? Well, that is left to you to decide.

"Clean Up and Paint Up" Co-Operation.

The master plumbers of Passaic may or they may not have been the first to co-operate with a clean up and paint up campaign. But one thing is certain. They will not be the last to enter into such co-operation. "Domestic Engineering" is working out plans with the National "Clean Up and Paint Up" Campaign Bureau for a widespread pulling together of the common interests of the Bureau and the

ROY J. SCHLEICH.
CLIFTONS LEADING PLUMBER
ROY J. SCHLEICH, HEATING
LAUND.
SEE SCHLEICH.
Now is the Time to MAKE Repairs to Your Plumbing and HEATING SYSTEM.

Another Plumbers' Day Float that Brought to an End the Successful "Clean Up" Week at Passaic, N. J.

plumbing dealers. Allen W. Clark, chairman of the Bureau, in a recent letter had this to say: "It seems quite evident to me that we can be of help to each other," meaning that a Bath a Day and "The Story of the Bath," and the interests these are serving, fit in with an angle of the work the Bureau is doing, "for," says Mr. Clark, "we can emphasize that community cleanliness begins in the home, in the bath tub."

In addition to "clean up and paint up," which is largely a spring campaign, the Bureau originated last year a "Get Ready for the Indoor Months" campaign. This campaign very naturally exerts its largest influence during the fall months. And, as you can plainly see, it includes looking after the plumbing, the bathroom and the heating plant. Here is co-operation where plumbing and heating can help the sale of paint and varnish and where paint and varnish can help the sale of plumbing and heating. It is "making one hand wash the other," as a friend used to say, who always afterward added, "which everybody can do but myself, for, you know, I have but one hand."

Outside Co-Operation.

Speaking of outside co-operation, the Beloit Water, Gas & Electric Co., at Beloit, Wisconsin, prints on one end of its monthly statements to customers a few lines about the value of bathing, and, at the same time, advises all gas and water users to see their plumber. As the statements go to the same people month after month the lines are changed every little while. We reproduce on these pages the lines

"Start the Day Right" is the Name of this Picture, Which Serves to Illustrate a Magazine Advertisement of Procter & Gamble.

printed on the statements for March and June. That co-operation is of considerable value, and every gas and water company might do something similar if every master plumbers' association would make an effort. Even without effort on the part of the plumbers a number of gas and water companies are using Bath a Day stickers and have Bath a Day signs on their office windows and on their trucks.

Other Co-Operation.

A few weeks ago August Buschmann & Sons, Indianapolis, published a most attractive booklet about plumbing and the goods they sell. The first page of this booklet reprinted the first page of "The Story of the Bath." This was done to create an interest in the popular story now being widely circulated. The first page aroused interest by printing enough of the story to make readers want more, and then closed by saying, "Thus begins 'The Story of the Bath,' a beautiful and interesting booklet, published by 'Domestic Engineering,' 1900 Prairie Avenue, Chicago." That is co-operation from the plumbing and heating industries to the public and from the public back to plumbing and heating.

After all it doesn't matter where or how co-operation begins, or what makes it co-operate, so long as it keeps on co-operating.

Down east there is a man by the name of Doane Eaton. Perhaps you never have heard of him. But that doesn't matter. He never heard of you. So you and he have an even start. Doane Eaton is a born co-operator. He has written a book. In this book he shows that what the world needs is a bath—a good scrubbing—and if given a bath it will do more to promote peace than conferences, standing armies or battleships. In this book he has quoted from "The Story of the Bath" and reproduced the Bath a Day slogan. He is co-operating with the American Legion in its Americanization work. He hopes to have the American Legion make use of "The Story of the Bath," and he is working out a plan to have the story translated into several languages. Thus from a source far away from plumbing and heating comes co-operation that money could not buy.

More Co-Operation.

"The Hotel Monthly," which speaks from the outside, suggests that hotels distribute copies of "The Story of the Bath." State and local boards of health listen closely to everything that has to do with sanitation. They are ready to prove their friendship for the plumber by co-operating with him.

The Duro Pump & Manufacturing Co., Dayton, Ohio, sent a copy of "The Story of the Bath" to every county agricultural agent in the United States. The agents read the story. Now they are talking water supply systems, bathrooms and the like to the farmers whom they serve. These agents are the great rural teachers, and every true teacher knows the value of co-operation. Like in baseball, "from Tinker to Evers to Chance"—do you remember, or are you old enough for that?—we have from Duro to Agent to Farmer, and, we might add, from Farmer to Duro to the whole plumbing industry. That is big co-operation.

A Newspaper Cartoon, Furnished to Local Committees by the National "Clean Up and Paint Up" Campaign Bureau.

Kansas City Co-Operation.

The Society of Sanitary and Heating Constructing Engineers, of the Kansas City which is in Missouri, would have co-operation for its middle name if it had room for a middle name. A minute's talk with W. C. Green, the general secretary, would tell you that not only does the Society believe in co-operation, but that he, for the Society, is co-operating all the time. This Society has a fine record for co-operative work. But we will pass the record and speak of its latest achievement. Through the Society the public schools of Kansas City have officially made "The Story of the Bath" a textbook. This means that every child who goes through the Kansas City schools must read and then study the story sufficiently well to be able to answer a number of questions dealing with bathing, its history and its benefits to the human body. When the Kansas City schools open next September they will have a new and interesting study, thanks to Mr. Green and the Society of Sanitary and Heating Constructing Engineers. Practically the same thing has happened in Brockton, Massachusetts, but there the co-operation came from the Brockton Gas Company.

Procter & Gamble, whose Ivory Soap is known wherever soap is used, are co-operating in the Bath a Day movement with magazine advertising, and are now making a wide distribution of "The Story of the Bath."

One of these days, when space will permit, we shall publish a long list of plumbing dealers, manufacturers, jobbers, gas and water companies, soap companies, brush companies, schools, colleges, department stores, banks, boards of health, laundries, and many, many others who have proved their willingness to co-operate by co-operating.

Some men say they owe their success to their wives. That is true, and it is not. A wife helps a man to succeed, but how does she do it? By co-operating. If she doesn't co-operate she isn't much of a wife, as wives go.

Someone has said that co-operation is a willingness to do so much for others that others are willing to do twice as much for you.

Truly, co-operation is the life of trade. Were it not for the co-operation that exists in present day business there would be less life in trade and less trade in life. Co-operation booms business when business is dull and booms business when business is booming. The man who has not learned to co-operate has not learned the first lesson in success. If, perchance, he has succeeded without co-operation, he could have succeeded in a greater way and with less struggle had he co-operated.

Signature Under Trade Name.

The Supreme Court of New York, Appellate Term, First Department, in reversing a judgment obtained by the plaintiff against defendant Zell and dismissing the complaint, in the case of Rabinowitz v. Zell, 191 New York Supplement, 720, says that the plaintiff agreed in a writing, in the form of an offer and acceptance, to sell certain goods. His offer was addressed to "Eastern Leather Goods." The acceptance on the same paper was by "The Eastern Leather Specialty Company, D. H. Zell." Zell was an employe of one Zelkowitz, who was doing business under the trade name of Eastern Leather Specialty Company. Zell's name on the acceptance was written under the trade name, and it is evident that his signature was intended to show who the person was who signed for the person or persons operating under the trade name. The plaintiff recovered a judgment against Zell, upon the theory that his signature brought him within the doctrine that fastens liability upon an agent who signs in his own name. But the court thinks it clear that the doctrine had no applicability. The plaintiff was dealing with the business house using the trade name referred to. Zell signed that name and bound only whomsoever was trading under it. It was of no importance in this action against Zell for goods sold that the plaintiff did not know who was trading under the trade name. His agreement was with the person or persons so trading. If I agree with "Billy, the Oyster Man," and do not know his name, my contract is with the person conducting business under that name.

AIR CONDITIONING

The Evolution of the Science of Air Conditioning and Ventilation—How It was Brought About by Study, Experimentation and Research

By James Mackay

(Continued from Page 576 in the June 24th Issue.)

Distribution.

"While distribution per se cannot be considered as a property or factor in air conditions, its importance in connection with mechanically ventilated rooms is sufficient to warrant its being taken into consideration in arriving at the final results. It is evident that if all air introduced into an occupied room from the outside was perfectly distributed, the CO_2 content would be constant at the various points in the room. To arrive at the percentage of distribution, therefore, the variations in the CO_2 content would be constant at the various points in the room. To arrive at the percentage of distribution, therefore, the variations in the CO_2 content are taken at the stations from the average of all samples taken in the room and are used as the percentage of distribution for the room as a whole. Assume a room in which tests are conducted at three stations, Nos. 1, 2 and 3. If the analyses of the three gave 8, 9 and 10 parts CO_2 respectively, the average would be 9. The percentage variation at station 1 is 88.8; at station 3 it is the same, and at station 2 it is 100. The average for the three stations, therefore, is 92.5."

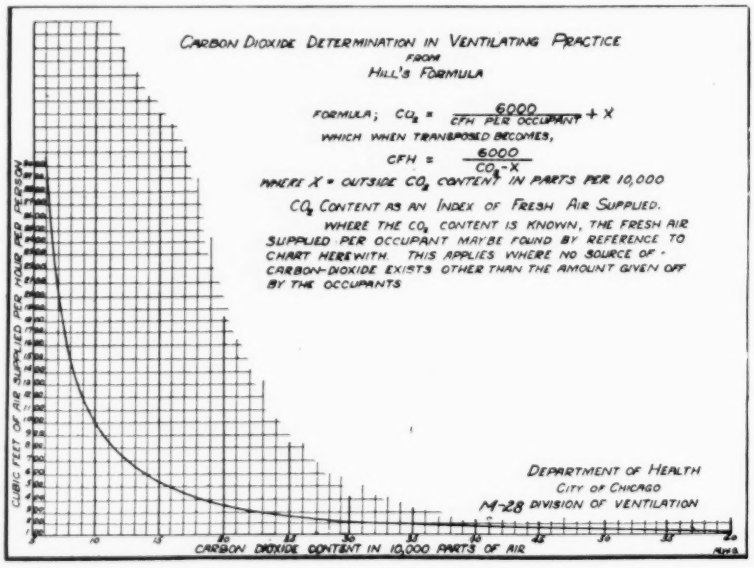

CARBON DIOXIDE DETERMINATION IN VENTILATING PRACTICE
FROM
HILL'S FORMULA
FORMULA; $CO_2 = \frac{6000}{CFH\ PER\ OCCUPANT} + X$
WHICH WHEN TRANSPOSED BECOMES,
$CFH = \frac{6000}{CO_2 - X}$
WHERE X = OUTSIDE CO_2 CONTENT IN PARTS PER 10,000
CO_2 CONTENT AS AN INDEX OF FRESH AIR SUPPLIED.
WHERE THE CO_2 CONTENT IS KNOWN, THE FRESH AIR SUPPLIED PER OCCUPANT MAYBE FOUND BY REFERENCE TO CHART HEREWITH. THIS APPLIES WHERE NO SOURCE OF CARBON-DIOXIDE EXISTS OTHER THAN THE AMOUNT GIVEN OFF BY THE OCCUPANTS
DEPARTMENT OF HEALTH
CITY OF CHICAGO
14-28 DIVISION OF VENTILATION
CUBIC FEET OF AIR SUPPLIED PER HOUR PER PERSON
CARBON DIOXIDE CONTENT IN 10,000 PARTS OF AIR

Fig. 7.—Carbon Dioxide Chart.

Mr. Hill's formula for indicating the fresh air supplied per occupant where the CO_2 content is known is shown in the chart, Fig. 7.

The Relative Humidity is determined in the usual manner by the use of a sling psychrometer; this instrument is shown in Fig. 8 and consists of two ordinary mercury thermometers scaled in the regular manner; the bulbs of both project below the mounting, one of these being bare (the dry bulb) and the other (the wet bulb) being wrapped tightly with a wick or cloth dipped in water; distilled water is used, at the same temperature as the air. Psychrometers for wall mounting give an approximate reading. When exact results are desired the instrument is provided with a handle (the sling psychrometer) and is whirled in the air rapidly; two or three or even more readings being taken until two successive ones are alike. The evaporation of the moisture on the wick surrounding the wet bulb extracts latent heat and cools the bulb; this evaporation will be rapid in very dry air, and less so as the percentage of humidity is greater in the air, until at the point of saturation of the air, no evaporation can take place at all, as the air is filled to its capacity at the existing temperature. The capacity of the air varies with the temperature, becoming proportionately greater at higher temperature; if the air at any given temperature has, we will say, 7/10 as much moisture as it can hold it is then said to have a "relative humidity" of 70 per cent. A table giving the percentages of relative humidity at various dry bulb temperatures and differences between dry bulb and wet bulb (called depression of wet bulb) follows. The percentage of humidity at any given dry bulb temperature may be read by following the line to the right to a point below the given depression of the wet bulb:

The dew point may be found by a reference to table giving the dew point at various dry bulb temperatures and relative humidity.

In order to calculate the amount of moisture required to bring any given quantity of air up to the desired humidity, the following table and explanation by the Thos. J. Douglass Co. is given:

Method of Computing the Amount of Moisture Required.

"First:—Ascertain the mean or average outdoor temperature and relative humidity during the six winter months for the locality in which the humidifiers are to be used.

"Second:—Decide on the conditions of temperature and relative humidity to be maintained in the building.

"Third:—Refer to the following table and compute the amount of moisture required, bearing in mind that average building construction permits at least one complete change of air per hour due to natural leakage around doors and windows. Therefore, the amount arrived at, is the amount required per hour.

Example: A room contains 3,000 cubic ft. It is desired to maintain a temperature of 68 degrees F., and 47 per cent relative humidity.

Average outdoor conditions for the winter months are 36 degrees F. temperature and 77 per cent relative humidity.

Relative Humidity Table.

Degrees Fahrenheit. Barometer 30 Inches of Mercury

Air Temp. (Dry Bulb)	Depression of Wet Bulb Thermometer																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
30°	89	78	67	56	46	36	26	16	6																
35°	91	81	72	63	54	45	36	27	19	10	2														
40°	92	83	75	68	60	52	45	37	29	22	15	7	0												
45°	93	86	78	71	64	57	51	44	38	31	25	18	12	6											
50°	93	87	80	74	67	61	55	49	43	38	32	27	21	16	10	5	0								
55°	94	87	82	76	70	65	59	54	49	43	38	33	28	23	19	14	9	5	0						
60°	94	89	83	78	73	68	63	58	53	48	43	39	34	30	26	21	17	13	9	5	1				
65°	95	90	85	80	75	70	66	61	56	52	48	44	39	35	31	27	24	20	16	12	9	5	2		
70°	95	90	86	81	77	72	68	64	59	55	51	48	44	40	36	33	29	25	22	19	15	12	9	6	3
75°	96	91	86	82	78	74	70	66	62	58	54	51	47	44	40	37	34	30	27	24	21	18	15	12	9
80°	96	91	87	83	79	75	72	68	64	61	57	54	50	47	44	41	38	35	32	29	26	23	20	18	15
90°	96	93	89	85	81	78	74	71	68	65	61	58	55	52	49	47	44	41	39	36	34	31	29	26	24
100°	96	93	89	86	83	80	77	73	70	68	65	62	59	56	54	51	49	46	44	41	39	37	35	33	30
	Relative Humidity																								

Saturation Table.

This table gives the maximum moisture capacity of a cubic ft. of air at different temperatures, and shows how the capacity increases as the temperature raises. The figures show the grains of moisture in a cubic ft. of air at 100 per cent relative humidity.

Temperature, Degrees F.	Grains in a Cubic Ft.	Temperature, Degrees F.	Grains in a Cubic Ft.
0	.564	56	5.020
5	.705	58	5.375
10	.873	60	5.744
15	1.07	62	6.142
20	1.321	64	6.568
25	1.611	66	7.020
30	1.958	68	7.516
35	2.366	70	7.980
40	2.849	72	8.598
45	3.414	74	9.074
50	4.076	76	9.658
52	4.372	78	10.286
54	4.698	80	10.933

Computing from the above table, we find that this outdoor air contains 1.9 grains of moisture per cubic ft., and the desired indoor condition will contain 3.53 grains, therefore, it is necessary to add 1.63 grains per cubic ft. per hour or 4,890 grains. As a pound of water contains 7,000 grains, this room will require ¾ of a pound of water per hour under average winter conditions. Under extreme conditions of zero temperature the room would require about double this amount. (A pint of water weighs approximately a pound).

The following table shows the great difference existing between indoor and outdoor temperature and humidity during the winter months:

	Temperature F., Degrees Outdoors	Indoors	Humidity, Per Cent Outdoors	Indoors
January	23.5	70.	82.1	
February	26.	70.	81.4	
March	34.	70.	77.3	
April	46.5	70.	71.9	Varies
May	56.5	70.	71.4	from
June	66.5	66.5	72.9	10 per cent
July	72.5	72.5	69.5	to
August	71.5	71.5	71.4	36 per cent
September	65.	65.	70.0	
October	53.	70.	71.5	
November	38.5	70.	77.4	
December	29.5	70.	80.4	
Average	49.	70.	74.8	23.

Referring again to the work of Dr. E. Vernon Hill, perhaps the most important of his findings is that of the extent of the necessary air motion as a factor in producing comfort in connection with a variation in the temperature or humidity, or both. With the thoroughness that has characterized his work he has worked out a chart which is shown in Fig. 9. This gives the rate of motion of the air in ft. per minute when the humidity increases, or taking it the other way around, the increased humidity which will compensate the increase in the motion of the air. The chart is worked out for individuals engaged respectively in hard work, moderate work, light work, and at rest. Another very remarkable result of Dr. Hill's efforts is the "Synthetic Charts." Reproductions of four of these are made in Figs. 10, 11, 12 and 13. These consist of, in the first place, the establishing of standards where none at all, or those very vague, had existed previously; and in the second place, the fixing of points of perfection and establishing for these points 100 per cent, and then by means of the various tests and analysis hereinbefore mentioned fixing the percentage of perfect in any given case by the use of the synthetic charts. These are made up of seven vertical columns, the first six of which refer to the various air conditions, and the seventh being allotted to a summing up of the findings and the assigning of an average percentage to the particular case under test. The charts reproduced tell their own story better than words could, but it may be said briefly that the point of perfection assigned 100 per cent is comparative with the conditions that will be found in the central northern portion of the United States on a "perfect day in June," and the zero point in the several columns represents conditions so bad as not to be livable. The tremendous advantage of the synthetic charts lies in the fact that the entire matter is based not only on scientific accurcy, but on a most admirable common sense as well, and that human error is reduced practically to the zero point.

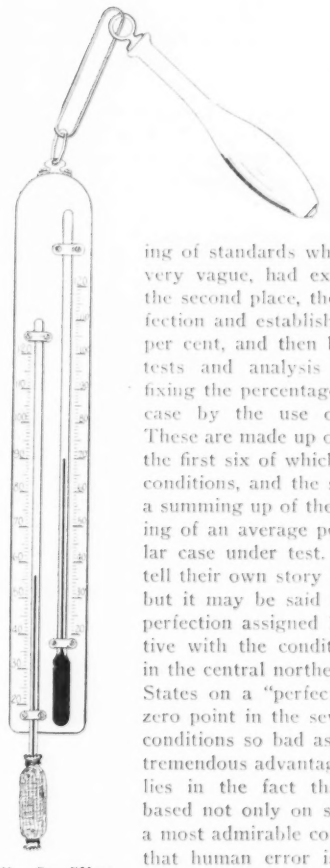


Fig. 8.—Sling Psychrometer.

With the present highly developed state of the art of mechanical ventilation (Air Conditioning), it is possible to bring to the school room, the factory, the theater, or any other place of human assembly, conditions very closely approximately Riley's ecstatic state of "knee deep in June." A school room should register between 95 per cent and 100 per cent if properly ventilated; 90 per cent may be regarded as good; 85 per cent just passable, and if below that, it has either a very deficient or poorly designed apparatus, or it is suffering some interference.

The following extracts, touching upon the requirements and test methods of the Municipal Code of Ventilation in Chicago, are quoted from the same report referred to in the earlier part of this article:

Location of Intake.

The fresh air intake must be located so that it is not liable to contamination from dust, smoke, gases from soil stacks, odors from manure boxes or garbage cans. It must be not less than ten ft. above the grade line. In some cases, where the intake opening is above a clean grass-covered yard, where it is difficult to obtain a ten ft. elevation, it may be at a lower point. Where an air washer is used the intake may be at grade level if this

appears desirable, but in no case, even though an air washer is used, must the intake be through bulkhead windows on a public sidewalk, street or alley, or through sidewalk gratings. Where disc fans are situated in the intake opening they must be protected by suitable hoods or gratings on the outside.

Velocity.

The velocity through the intake shall not exceed 1200 ft. per minute under ordinary conditions. In new buildings a 1000 ft. velocity may be insisted upon. The intake should be construed as meaning the opening from the external air, the duct extending from this point to the coil or fan inlet, as the case may be.

Heating Coils and Housing: "**Location:**—Heating and tempering coils must be installed at least 24 inches above the water line of the boiler where a gravity return is used. The coils must have sufficient clearance between the washer and the intake.

"**Velocity:**—When steel plate or multiblade centrifugal fans are used, the velocity through the coils should not exceed 1,200 ft. Where disc or propeller fans are employed, the velocity should not exceed 1,000 ft., and if possible, should not be more than 800 ft.

"**Temperature:**—The final temperature of the air leaving the coils may be determined from the charts or tables of the manufacturers. If the air is delivered into the auditorium directly from the heaters or through a short run of ducts not exceeding 12 ft. in length, the temperature leaving the coils will be taken as the temperature it is desired to maintain in the room. Where a system of distribution of ducts throughout the auditorium is used, 10 degrees will be added to the final temperature for duct losses. In case a

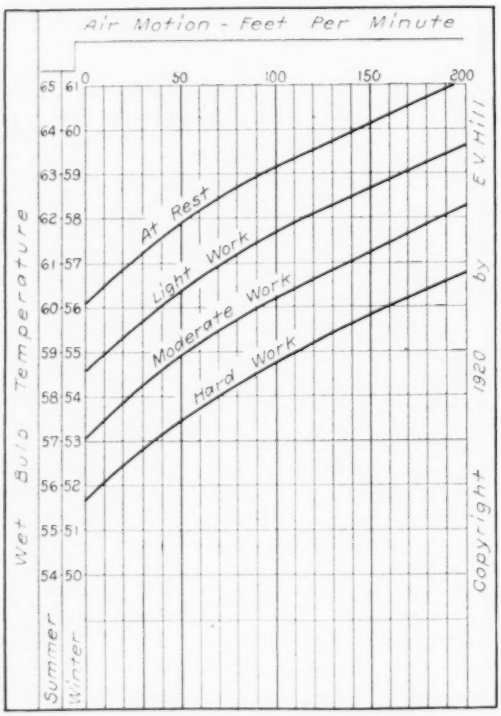


Fig. 9.—Air Motion Chart.

blast system is used with no direct radiation, the total heat losses will be calculated and a sufficient number of stacks used to give the final temperature necessary to offset the heat losses from the building and maintain the temperature desired in the room. This number may be determined as follows: Add to the radiation required to bring the outside air * * * * * * to the room temperature, enough additional radiation to condense the same amount

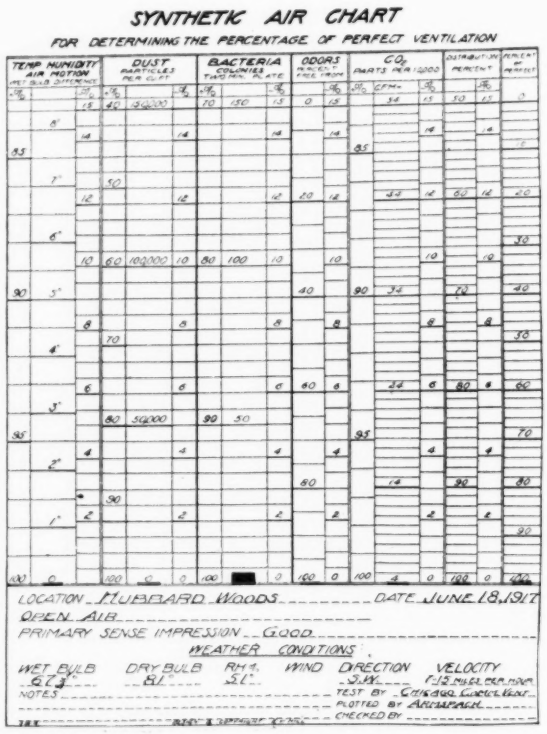


Fig. 10.—From a Test in the Open Air in a Country District.

of steam that would be required for direct radiation to offset the heat losses from the building."

* * *

"Tempering and Heating Coils and Pipe Sizes.

Velocity in Ft. per Minute Through Steam Supply	For Warming Fresh Air Sq. Ft. of Surface Tempering Coils	Heating Coils	Sizes of Various Pipes in Inches Supply	Gravity Return	Vacuum Return
3,000	29	27	1	1	¾
3,500	36	48	1¼	1	¾
5,000	90	120	1½	1	¾
6,500	170	220	2	1¼	¾
6,620	270	360	2½	1½	1
6,830	400	530	3	2	1¼
6,680	550	730	3½	2	1¼
6 880	720	950	4	2½	1½
6,680	1,125	1,500	5	3	2
6,900	1,625	2,200	6	3½	2½
7,750	2,425	3,250	7	4	3
7,460	3,125	4,200	8	4	3½
7,550	4,000	5,200	9	5	3½
7,640	5,000	6,600	10	5	4
7,400	7,000	9,500	12	6	5
7,800	10,000	13,300	14	7	5

"**Air Washer:**—* * * * * The velocity through the washer should probably never exceed 600 ft., and will usually be from 450 to 500 ft.

"**Centrifugal Fans:**—In determining the size of a centrifugal fan for a given installation the resistance through the intake, coils, air washer, ducts, etc., will be totalled and a fan selected to deliver the amount of air required against this total static pressure. If fans are specified on which the manufacturers have no published capacity table, or if the published tables are known to be inaccurate, comparison must be made with the capacity of tables of fans of the same sizes of standard makes. A fan should be selected to deliver the quantity of air required at the desired pressure

and at a peripheral speed that will insure economical operation."

* * *

"Main Duct: Velocities:—The velocity through the main duct in installations in theaters and other public buildings shall not, except in unusual cases, exceed 1,000 to 1,200 ft.

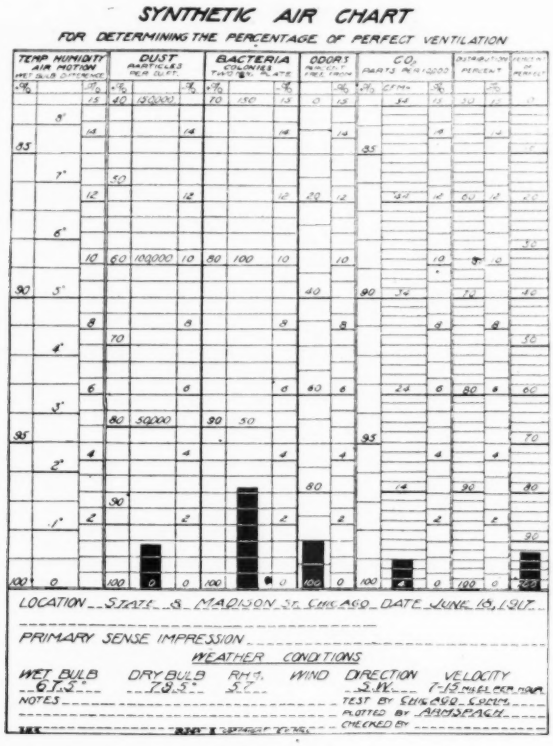


Fig. 11.—From a Test in the Open Air in Chicago's Business District.

per minute. In factories and other places where noise is not objectionable, or where the question of power consumption is not important, this velocity may be exceeded.

Branch Ducts:—The velocity in branch ducts must not exceed that in the main, but should be reduced gradually, the velocity approaching that to be maintained at the register. Exception to this rule will occasionally be encountered where short runs from the main, especially near the fan, will have to be made smaller in order to introduce sufficient resistance to obtain the proper velocity at the register.

"Velocity at Register Faces: * * * * *

(a) Floor Registers:

Floor opening with mushrooms, 150 ft. velocity in throat.

Floor plate registers over plenum chamber, 150 ft. velocity.

No supply registers will be allowed in aisles, lobbies or public spaces. Where floor ducts for supplying fresh air are used, mushrooms only will be allowed. Where a large plenum space beneath the floor is available, floor plate registers with controlling dampers may be used.

(b) Side Wall Registers:

6 ft. above the floor 300 ft. velocity.
7 ft. above the floor 400 ft. velocity.
8 ft. above the floor 500 ft. velocity.
9 ft. above the floor 600 to 900 ft.

(c) Ceiling Registers:

7 ft. above the floor 150 ft. velocity.
8 ft. above the floor 200 ft. velocity.
9 ft. above the floor 300 ft. velocity.
10 ft. above the floor 350 ft. velocity.
12 to 15 ft. above the floor 400 ft. velocity.

No supply registers in the ceiling will be approved where the ceiling is over 15 ft. above the floor. Exception may be made in certain cases where mechanical exhaust at the floor line is employed. In determining velocity through registers the volume of air to be delivered will be based on the net free area.

(d) Outlets:

"In general where supply registers are located in the floor, outlets will be in the ceiling or side wall at the ceiling line. Where supply registers are in the side wall or ceiling the outlets will be in the side wall at the floor line, or in the floor. The outlet area should have a capacity to handle two-thirds of the air introduced through the supply registers at 350 to 400 ft. velocity, if by gravity. If mechanical exhaust is employed a velocity as high as 1,000 ft. per minute will be accepted."

"Methods of Introduction:—In general where fresh air is introduced into auditoriums through wall registers, they may be located in any except the rear wall. Repeated tests have shown that with rear wall introduction objectionable drafts are produced on the backs of the occupants' heads, except

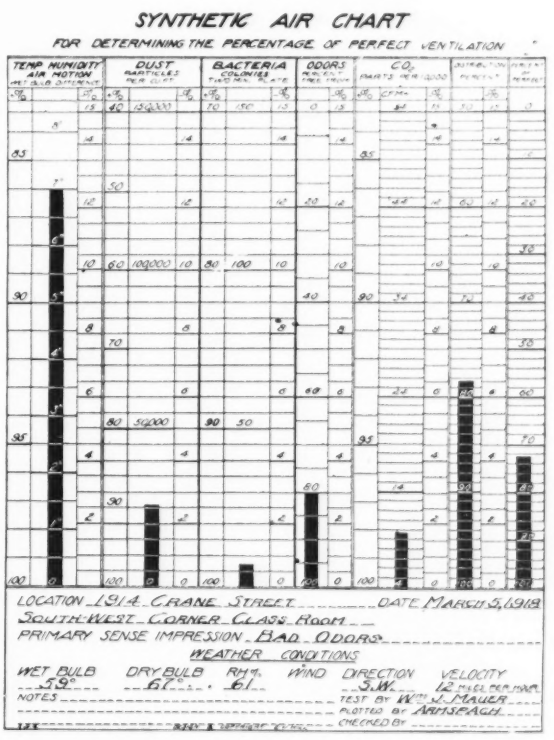


Fig. 12.—From a Test in an Improperly Ventilated Schoolroom.

in those cases where the velocity at the register face is extremely low, and the register at least 10 ft. above the floor. Furthermore, the method of introducing air at the rear of a theatre and withdrawing it at the stage interferes with the acoustics of the auditorium."

(To be Continued.)

Referendum petitions have been filed in Fitchburg, Mass., which hold up the award of contracts on the new schoolhouse on Academy Street until the voters shall pass upon them at the polls. The heating contract had been let to the Parks-Cramer Co., and the plumbing to the Jennison Co. All of the contracts on the building are held up.

QUESTIONS & ANSWERS

This department is a clearing house for ideas and is open to every reader of "Domestic Engineering." Problems sent in are replied to at the earliest possible moment by "Domestic Engineering," and this department can be made more valuable if readers themselves will help the man who needs assistance. Read the questions and answers. If you have had similar problems, or know from experience how the faults can be remedied, do not hesitate to send in your comment or criticism. It will be some satisfaction to you to know that you have helped a fellow craftsman and a pleasure for us to pass on the data. "Every man owes some of his time to the upbuilding of the profession to which he belongs."

THE QUESTION OF POLLUTION OF WELLS BY SEWAGE EFFLUENT FROM SEPTIC TANKS.

Editor, "Domestic Engineering":—I have been reading an article on septic tanks in your February 11th issue, and would state that I have been up against the same thing here. I put in a septic tank, a round steel one, 30 inches deep and 48 inches across. In connection with it I ran 60 ft. of glazed tile pipe with tight joints, and then 120 ft. of drain tile. There is a well which is driven 60 ft. deep, within 50 ft. of the tank. But the drainage runs away on a 45-degree angle from the well. See Fig. 1. The soil is very low and flat.

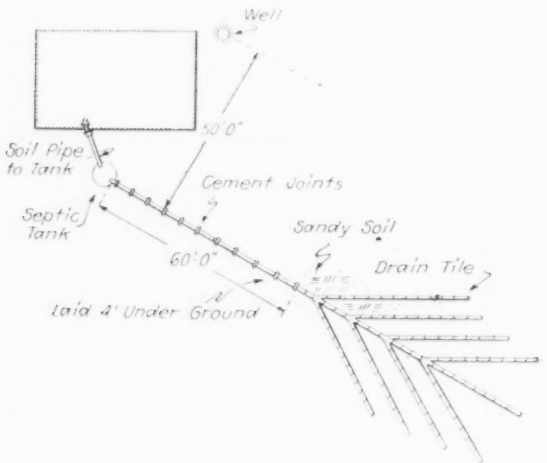


Fig. 1.

Do you think there will be any danger to the well? The tank takes care of one bath room and one sink. In the spring the basements in this locality fill with water, which stays until about June. We have been after the city for five years to put in a sewer to take care of this part of the town. It is very thickly populated, but the city council keeps putting it off and wants to pave the main streets instead. I think it would be better to put in a good sewer. We have good gravel streets and are right on the Mississippi River, with a good fall.

What is your idea of the septic tank installation?

I have read all the books on septic tanks that I can get hold of, but no two agree, as was said in your February 11th issue.

Minnesota R. W. E.

According to the sketch, we assume that the disposal field is about 80 ft. away from the well. As to whether or not the effluent delivered to this disposal field by the tank will contaminate the well, is something we cannot say definitely. It may, and it may not. If the ground is fine sand down as far as 50 ft. or more, or if it has a deep stratum of fine sand through which the effluent must filter before it reaches the well, we are inclined to believe that there is little danger of contamination from that source.

Should there happen to be a bed of hard pan, or clay, between disposal field and well the chances of contamination are less. The greatest danger lies in rock fissures which convey water like open channels without filtering it.

You will have to judge for yourself, basing your opinion on the character of the ground and its different strata, which may be fairly well known by the well drillers of your locality.

There is a simple test you can apply which may tell you something. Dig a hole at the edge of disposal field nearest the well. Make it 2 or 3 ft. deep. Dump, say two pails of rock salt into this hole. Then fill it full of water. Let this seep away, fill it again and again, say three or four times. Pump water from the well during the test. Taste the water periodically. If the water leaks into the well you will taste the salt in the well. If the water never tastes salty, you have good reason for supposing that the well is not being contaminated.

If you suspect the well, just draw a gallon and send it to your State Board of Health for analysis. We believe they will gladly do this for you.

As to the septic tank and cemented joint pipe line, they cannot pollute the well, if they are water-tight as they should be. You can test the tightness of the drain with a smoke machine.

TROUBLED WITH CONDENSATION OF SMOKE AND GASES IN THE FLUE.

Editor, "Domestic Engineering":—I wish you would please explain in your paper what makes some flues throw off a bad smelling gas or odor, which seems to occur only at times. Where does it come from?

It looks to me as if it came through the brick plastering and the wall paper on the flue. I would like to know what action takes place in the flue that makes these gases and how the gas is forced into the rooms, as I believe it comes right through the flue. I have noticed it on the flues that have no opening, except one where the furnace or stove is connected. By what means can these gases be overcome?

Illinois. H. H. K.

The disagreeable odor from gas is due to the fact that there is not sufficient height to the chimney to provide the velocity to carry the gas and products of combustion out of the flue and into the atmosphere. The odor is caused by

the condensation of the smoke and gases in the flue. These should have escaped to the atmosphere without condensing.

Correspondent states that this condition occurs only at certain times. It is probable, therefore, that the top of the chimney is so low that with the wind in a cerain direction it blows across the top of the chimney and cuts off the draft.

This condition may be remedied by adding a sufficient amount to the height of the chimney to raise the top of it above the influence of the wind. A stone cap or top may be added supported by brick piers at each corner of the chimney, and in this event the area of the opening on each side should equal the area of the flue.

FURNACE COIL REQUIRES CIRCULATION TRAP TO PREVENT REVERSE CIRCULATION.

Editor, "Domestic Engineering:"—Being a reader of your valuable paper, I have a problem on which I wish you would give me some information.

We installed a gas water heater and a coil in a heater to heat a 40-gallon boiler in the kitchen, Fig. 1, showing how we made the connections. The boiler and gas water heater are in the kitchen, the boiler being across the kitchen about 10 ft. from the gas heater. We ran a ½-inch brass pipe from bottom connection of boiler down to cellar ceiling, across ceiling to a point over hot water boiler in cellar. There we left out a tee to drop down to bottom connection of the coil in heater. From the other end of tee we ran across cellar ceiling to a point under gas heater in the kitchen, then up through the floor and into the bottom of the gas heater, out of the top of gas heater and across ceiling to the top of the hot water connection of boiler. From the top pipe of coil in the heater, we ran up to cellar ceiling

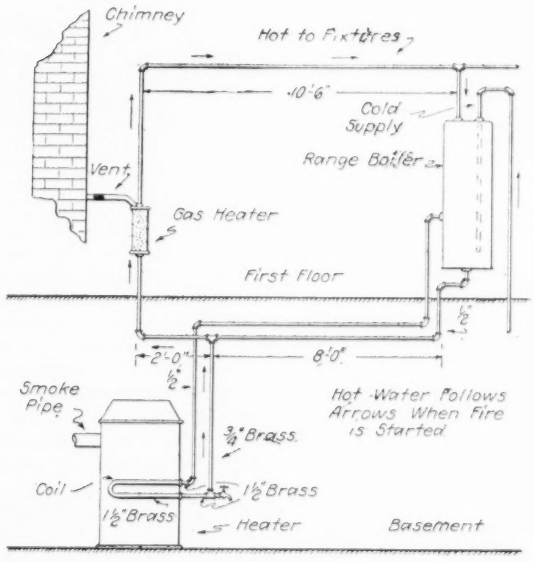


Fig. 1.

and across ceiling to a point under the boiler in the kitchen, then up through the floor and connected into side coupling of boiler.

When we started the fire in the hot water heater in the cellar, the hot water came out of the bottom pipe of the coil and up through the gas heater and across the ceiling to the top of the boiler and heated the boiler from the top, instead of going up the pipe to side coupling of boiler. I ran off a few pails of water from the coil to see if the circulation would go the other way, but it wouldn't work.

If we install a check valve on the bottom pipe of the coil, I know it will circulate the right way, but I dislike to use a check valve if there is any other way of doing it.

Massachusetts. K. G. A.

It seems quite evident that the trouble is simply reversed circulation caused by the hot water starting to circulate the wrong way. The lower pipe of coil probably heats first. The heated water therein can go either way, and whichever way it happens to start, is the way the circulation will con-

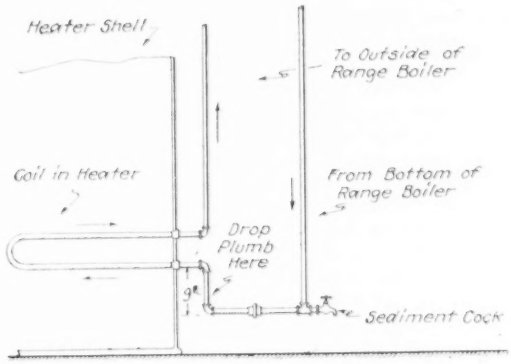


Fig. 1.

tinue. If the coil happens to tip down, even the least bit at the return bend, the tendency is for the hot water in bottom pipe to start toward the return inlet, as the bubble of a spirit level will run to the high end. This starts a reversed circulation which upsets the system.

The remedy is to trap the inlet to coil in such a way that the hot water cannot start up in the return line. Of course a very light check might do it, but we do not like a check installed in such a place. It tends to retard circulation. We prefer an arrangement similar to Fig. 2. This is really a hot water trap. The feed to coil is dropped plumb about 9 inches or so as shown. The hot water cannot easily descend in this drop leg, therefore it starts to go up in the right direction, which is shown by the arrows.

ESTIMATING FUEL CONSUMPTION IN A THEATER BUILDING.

Editor, "Domestic Engineering":—Will you kindly give me an estimate of the amount of fuel needed per day for a theater containing 1,314 ft. of steam radiation and a boiler with a gross capacity of 2,500 ft., with a grate surface of 42x37 inches, temperature of auditorium 65 degrees, outside temperature 40 degrees below zero, soft coal being used. A suite and two stores are in the front of the building, which is of first-class construction.

Vancouver. M. P.

Estimating the probable fuel consumption of a heating boiler per heating season is a very uncertain proposition, as the result is contingent upon many conditions. The calculation may be based upon the sq. ft. of grate area, the amount (sq. ft.) of radiation installed, or the cubical contents of the building to be heated.

Correspondent gives the required inside temperature as 65 degrees and the outside temperature as 40 degrees below zero. It is probable that this extreme outside temperature holds for only a small portion of the heating season. If 1,314 sq. ft. of radiation is installed or required to maintain the temperature under these conditions, we may assume that much less radiation will be necessary the major portion of the heating year, because the mean or average temperature will be much less than 40 degrees below zero.

Again, we can hardly consider that a temperature of 65 degrees will be required in the theater 24 hours of each day. Factors such as these will vary the probable amount of fuel required.

Estimating on a heat unit basis we may consider that each sq. ft. of radiation gives off 250 B. t. u. per sq. ft. per hour and that the surface in the piping will equal about 25 per cent of the radiation. Say that the piping equals approximately 300 sq. ft. 1314+300=1614 sq. ft. of condensing surface. 1614×250=403,500 total B. t. u. per hour.

In a good grade of soft coal there will be about 6000 B. t. u. available for actual heating for each pound of fuel. 403,500÷6000=67 pounds of coal required hourly. If the apparatus was run at the maximum rate of efficiency 24 hours of each day there would be required 67×24 or 1608 pounds, or a little more than 7/10 of a gross ton per day. By considering the portion of the day that the full power of the apparatus is required, and also the average outside temperature, these figures can be corrected to meet correspondent's requirements. The figures are based upon all radiation being in use every hour of the day and night.

The size of the grate is given as 42×37 inches, equaling about 10.8 sq. ft. At a fuel consumption rate of 6 pounds per sq. ft. of grate per hour the requirements would be 10.8×6 or 64.8 pounds per hour. This rate is nearly sufficient to deliver the B. t. u. required as estimated.

AIR-BOUND CIRCULATION BETWEEN STOVE AND BOILER.

Editor "Domestic Engineering":—I would appreciate your opinion about the layout shown in Fig. 1. The boiler is connected to an ordinary kitchen stove, and the boiler is located in the bathroom.

The hot water pipe from the water front to the top of the boiler consists of 36 ft. of pipe, and there are three more turns in the pipe than are shown in the sketch.

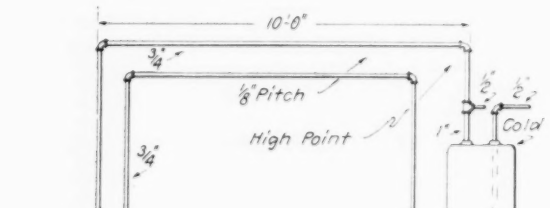


Fig. 2.

Sometimes this system works all right one day or two days, after which it becomes air-bound. When this happens, the feed pipe becomes red hot, while the return stays cold, and the system makes a noise somewhat like a young blacksmith shop.

I have placed air vents on the high points on both feed and return pipes without remedying the defects.

I have installed a number of boilers in this manner with very good results.

What is wrong with this installation? B. B.

Chicago.

Our opinion is that the arrangement is wrong. The circulating pipes are air-bound. Placing a vent-cock on the highest point and drawing off the air occasionally cannot be satisfactory, because the air gathers slowly but continuously.

The only kind of air-vent that has any chance of being satisfactory is an automatic vent and even that is very liable to become clogged at times.

A particular disadvantage of the arrangement shown, in the way of circulating power, is the return loop. It is a difficult matter for the circulating force to lift the cold water

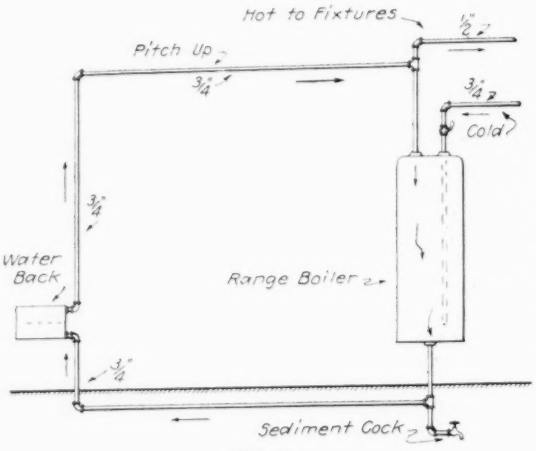


Fig. 2.

from bottom of boiler up the pipe A so that it may get over this loop, and into the bottom of the heater. That is against nature.

We recommend changing the installation as per sketch Fig. 2. The return loop is eliminated. The return line is run along under the floor with the sediment cock at lowest point.

In this arrangement it is best to take the supply line to fixtures off the top of the tie on the hot-water flow loop as shown. This allows all air liberated from the water-back to be drawn off along with the hot water at the fixtures. This arrangement should work very well, if the circulating piping is clear.

THE TIGHT PLACE.

By L. G. H.

Sooner or later you are sure to get into a Tight Place.
When that time comes you will show your real mettle.
Some people are ready to quit the first thing.
Others hang on for a little while and then resign.
A Few put on the soft pedal and straddle the fence.
These people never get anything out of the experience.
A Very small number face situation firmly.
These individuals have the qualifications of leadership.
They take the dilemma by the horns and make the emergency serve them.
Through this sort of training master minds are developed.
Master Minds belong to men who have surmounted obstacles.
Men Who have found themselves in tight places and have discovered the way out.
Temporizing with some conditions only makes them worse.
Learn When to be patient and when to act.
A Tight Place calls for cool good judgment and wisdom.
It Calls for a knowledge of cause and effects.
It Requires a vision of probable results under different conditions.
The Master Mind is not dismayed by the Tight Place,
But Can make it serve in terms of Experience, Cash and Determination.
The Tight Place properly met makes bigger things possible.
It Weeds Out the Weaklings and Strengthens the Strong.

LEGAL QUESTIONNAIRE

*Will the Following Form of Plumbing Contract With Provisions for Title of Fixtures to Remain in Contractor Stand the Test of Court? This Question is Answered in a Most Careful Manner**

By "The Judge"

Comment on Form of Plumbers' Contract with Provisions for Title to Fixtures to Remain in Contractor.

Editor "Domestic Engineering":—I am enclosing a copy of an agreement which I have drawn up, and I would appreciate very much, having your opinion on same. This covers both cash and installment work, and I believe all points are pretty well covered. The form of contract is as follows:

"1. This agreement made this.....day of .....192... between..... of the city of....., State of Michigan, part... of the first part, and J. M. C. of the City and County of Saginaw, State of Michigan, party of the second part;

"2. Witnesseth, that said second party shall install and complete plumbing according to specifications hereto attached in.....certain building.. to be .....by said first party on that certain parcel of land situated in the City and County of Saginaw, State of Michigan, and described as follows: (Description of Property to be inserted here.)

"3. Said second party shall furnish all labor and material to install said plumbing, both rough and finished, including piping and fixtures, in accordance with said specifications, to which reference is hereby made, and which are hereby made a part hereof by references. Said work shall be done in a good, workmanlike manner and with reasonable promptness, as the progress of the building shall permit.

"4. In case said first party shall order any work done or material furnished in addition to these specifications herein, or shall change or alter said specifications in any way, such additions, changes or alterations shall be paid for by said first party, additional to this contract, at a fair and reasonable valuation, and the amount due therefor shall be added to the contract price hereinafter mentioned, or to any material, equipment or fixtures therein, whether affixed to the building or not.

"5. Said second party shall not be liable for any delay in the progress of said work or for any loss or damage to said building or to any materials, equipment or fixtures herein, whether annexed to the building or not, or for any other loss in connection therewith, due to strikes, lock-outs, delay by common carriers, casualties, fire, wind, lightning, earthquakes, acts of Providence, or other causes beyond the control of said second party, and all losses and damages due to such causes shall be borne by said first party; in case of the damage or destruction or loss of any material, equipment or fixtures in said building, whether annexed thereto or not, belonging to said second party from any of said causes, or from theft from said premises, said first party shall reimburse said second party therefor to the full value thereof, and for all labor expended thereon.

"6. It is therefore expressly agreed that the title to the above described materials to be so furnished by said second party shall be and remain in said second party until all sums of money called for in this proposal and required to be paid by said first party are fully paid said second party in legal tender of the United States; and that until said sums of money are so paid, said materials shall be and remain personal and movable property, whether annexed to the realty or not; and in case of default in the payment of any of the instalments or of any interest above provided for, said second party is expressly authorized to enter upon said premises and take possession of and remove said materials at any time, and credit the value thereof, less the cost of installing and removing the same, toward payment of the amount due second party under this contract.

"7. Said first party shall pay said second party for work and labor done and materials furnished or installed in accordance herewith, the sum of $....., payments to be made in amounts and at times, as follows: ...., but nothing herein contained shall in any way interfere with the right of said second party to claim or assert a mechanic's lien against said property.

"8. Upon default of said first party of any of the payments herein specified, or of any of the conditions herein contained, the entire amount due said second party hereunder, shall be due and payable forthwith, and said second party shall be authorized to take any and all steps he may deem necessary and advisable for the collections thereof.

"9. This contract may be terminated by either party for unreasonable delay caused by the other, or by said second party at any time upon the failure of said first party to make payments in accordance with the terms hereof; and in case of termination for any cause, said second party shall be paid pro rata for such proportion of the total work as he shall have performed.

"10. This contract shall not be assigned by either party hereto without the consent in writing of the other party.

"11. In Witness Whereof the parties hereto have hereunto set their hands and seals the day and year first above written, in duplicate."

.....L. S.
.....L. S.
.....L. S.

Answer: I have looked over your form of contract and while, perhaps, my suggestions for changes may not be vital, I believe that they should be made.

In your first paragraph you use the phrase "party of the second part." It would be well to use this same phrase throughout the contract instead of "said second party" as you have in other paragraphs, for the sake of uniformity, if nothing else.

You begin your third paragraph with the words "Said second party shall furnish," and start your last sentence of this paragraph with "Said work shall be done." This reads more like the specifications than the agreement. A better

*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the Very Nature of the Service, which is rendered without a personal interview.—Editor.

phrasing would be: "The said party of the second part hereby agrees to furnish, etc.," and "Said party of the second part hereby agrees to do said work in a good workmanlike manner, etc."

Paragraph Four does not seem to me to take care of the situation which might arise if an alteration in the plans should be made which either does not increase the cost or make it less. I think that a fairer paragraph and one which will cover more ground would be something like this, which is in substance taken from the Standard Form of Contract of the American Institute of Architects:

"4. The said Party of the First Part may, without invalidating this contract, make changes by altering, adding to or deducting from the work to be performed by the said Party of the Second Part, the contract sum being adjusted accordingly, as provided hereafter. All such work shall be executed under the conditions of the original contract. No such alterations, additions or deductions shall be made or be effective except upon a written order from the owner, and no claim for an addition to the contract sum shall be valid unless so ordered. The value of any such change shall be determined in one or more of the following ways:

"a. By estimate and acceptance in a lump sum.

"b. By unit prices named in the contract or subsequently agreed upon.

"c. By cost and percentage or by cost and a fixed fee."

Except that I should change the phrase "Said second party" as I mentioned above, I think your paragraph 5 is a good one from your standpoint. It is so much in your favor, particularly with reference to fixtures which have not been attached and also that part which makes the owner liable for theft, that you may have trouble in getting some owners to sign it.

As to paragraph 6, you say, ".... and in case of any default in the payment of any of the instalments or of any interest above provided for ...." but you do not make any reference to any interest in any part of the contract and the instalments are as "hereafter proyided" instead of as "above provided."

Paragraph 6 probably does not give you the protection which it would seem to give you on its face. I have reference to the fact that, if the owner has placed a construction mortgage upon the premises prior to your furnishing the labor and materials, the mortgagee might have something to say regarding your right to enter upon the premises and remove fixtures or materials which have already become a part of the realty. I have discussed this phase of the situation in "Domestic Engineering," January 26, 1918. As I stated then, the only safe way is to secure the prior mortgagee's consent to the agreement which you have entered into with the owner regarding the title to the materials and fixtures.

While on this same subject I would call your attention to a very recent decision in another state which holds that under a conditional contract of sale, where the instalments paid by the purchaser of a truck were agreed upon as rent, and the seller had a right to repossess the truck upon default and then sue for damages, the agreement provided that the contract price should be "liquidated damages" for the breach of the contract by the purchaser. Thus, the seller was able to take back his truck and at the same time sue for the entire purchase price. This was a hard contract, but one which the courts upheld. Under ordinary circumstances, when there is no conditional contract of sale, if you should be prevented from removing the materials or fixtures and should sue out a writ of replevin, so-called, you would not be allowed to have your fixtures and materials and your damages for breach of contract, at the same time. I call your attention to these facts so that you will realize the extent of the rights which you will have under the contract. In cases where you wish to enforce this paragraph of the contract or believe that you will have to enforce the same, because of the financial standing of the owner, it would be well to have some local lawyer draw up a paragraph which will be of greater value to you and which will fix the rights of the parties under the peculiar circumstances of the particular case.

Your next paragraph, providing for instalment payments would seem to be adequate except that I should change the phrasing of "Said first party" and "said second party," as I have outlined above.

Under paragraph 8 it would seem that, if the owner defaults on his first payment, you would have a right to sue to the entire sum due, regardless of the fact that you have not performed the work. This is a good paragraph for you, but one which you will have hard work to get a careful owner to sign. I suggest, as an alternative, something like this:

"8. Upon default by said party of the first part in making any of the payments in the amounts and at the times above specified in paragraph 7, or upon default by said party of the first part in performing any of the conditions herein contained, the obligation of the said party of the second part to continue performance of this contract shall cease, and the said party of the second part shall have the right to his damages as if he had done and performed all that he has promised and agreed to perform under this contract, and the said party of the second part is hereby authorized to take any and all steps which he may deem necessary and advisable for the collection of his damages."

With reference to the above paragraph, of course, if it is your intention that your customer shall pay you the entire contract price regardless of fact that you may have done very little on the work, your own paragraph 8 is the better one. My paragraph 8 is the usual kind of a paragraph, providing that you shall have as your damages, what you would have made on the contract as a profit, but not the entire contract price, which includes expenses as well as profit.

Paragraph 9 seems to be very good, except for phrasing about "party of the second part," etc.

Paragraph 10 is also all right, if you wish such a clause in your agreements. It might prevent you, if you should get hard up, from assigning payments due you after you had completed the work.

As you appear to have gone into this matter of a contract form very carefully, I suggest that you secure from some architect in your city a copy of the Standard Form of Contract of the American Institute of Architects. You might find in it some provisions which would just fit your situation and business practices. For instance, Article 21 of this standard form provides for fire insurance, as follows:

"The owner shall effect and maintain fire insurance upon the entire structure on which the work of this contract is to be done and upon all materials, in or adjacent thereto and intended for use therein, to at least 80 per cent of the insurable value thereof. The loss, if any, is to be made adjustable with and payable to the Owner as Trustee for whom it may concern." Then follow other provisions giving you a right to inspect the policies, etc. This provision is more of a protection to you than the mere promise of the owner that he will pay for all such losses, for the owner might not have any money. As he is made a trustee under the above provisions he might be criminally liable if he used the insurance money.

Article 35 of the Standard Form is a good one, as follows: "Delays—If the contractor is delayed in the completion of the work by any act of or neglect by the owner or the architect, or of any employee of either, or by any other contractor employed by the owner, or by changes in the work, or by strikes, lockouts, fire, unusual delay by common carriers, unavoidable casualties or any causes beyond the contractor's control, or by delay authorized by the architect pending arbitration, or by any cause which the architect shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the architect may decide.

(Continued on Page 38.)

SOMETHING NEW IN PLUMBING

A Plumbing Installation Made by the Chas. Hunter Plumbing & Heating Co. in a Municipal Comfort Station in Kansas City, Mo., Without House Trap, Stack, or Fresh Air Pipe

By Chas. Hunter

THEY say that necessity is the mother of invention. This old saying has been recently exemplified in the construction of a job of plumbing in a municipal comfort station built under the sidewalk in front of, and on the property of the United States Post Office Building at Kansas City, Mo.

The permission for the use of the site by the city was obtained from the federal government on the following conditions:

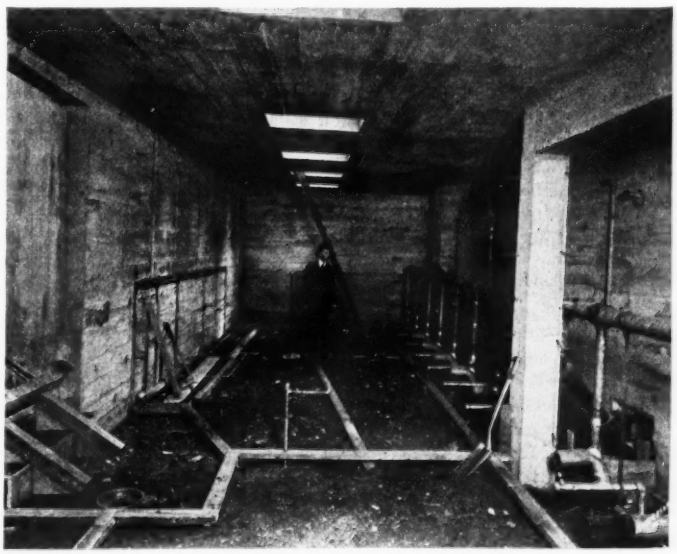
That the comfort station was to be built below the sidewalk in front of the postoffice at Eighth Street and Grand Avenue.

That the sidewalk must not be obstructed in any way, and that no stack or vent pipe would be allowed to protrude either above the sidewalk, alongside of the building, or within said building.

The plumbing, drainage and ventilation must be confined within the station and under the ground.

Some head work was required to overcome the old time idea that you must have just such a construction, or you are all wrong.

Well, this old idea was exploded in this case once and for all. Not alone to the satisfaction of the federal officers, but to the plumbing inspector, W. T. Galloway, and to the architect, Frederick Gunn, who designed the building for the municipal government of Kansas City, Mo.



The Roughing-In Plumbing in the New Public Comfort Station in Salina, Kansas.

And this is the way it was done. Sit up close boys and take notice. Remember you are never too old to learn. And if the cell holes in your tired brain are not all filled up with foreign matter pertaining to other things than your own line of business, perhaps you may be able to imbibe some real new knowledge of work in your own line that will be in keeping with the trend of the times toward using advanced methods.

The architect, Mr. Gunn, after having designed the station and located the plumbing fixtures on the plans, was up in the air as to how to comply with the government's requirements of no stacks or vents.

He called to his aid the Chas. Hunter Plumbing & Heating Co., and the superintendent of this firm solved the problem in the following manner, which is interesting and unusual.

In the room there were located 13 wall waste water closets, 3 lavatories, 2 urinals, 2 drinking fountains, and 2 floor drains.

To comply with the city ordinance, this job should have a 4-inch waste pipe, a 4-inch house trap, a 2-inch fresh air pipe, and a 4-inch stack to roof of high building with all fixtures back-aired.

Instead of a 4-inch sewer, there was an 8-inch sewer brought into the station from the main sewer in Grand Avenue. Up to the outer wall of the station, this pipe was tile. From this point the same was extended with 8-inch extra heavy cast iron to a point in the work space behind the battery of 13 water closets. On the incoming horizontal line was placed on its back an 8x6x4-inch Y. The 6-inch run received the waste at right angles from either side of the battery of closets, and of course was intersected at this point by two lines of 4 inches each. Each 4-inch branch line of the two lines taken off the 6-inch waste was run horizontally to the end of the room, and at intervals of 3 ft., a 4-inch Y and lead bend was inserted to receive the waste from its respective water closet. At each end of the battery the waste line was changed from extra heavy soil pipe to 4-inch galvanized pipe with cast iron fittings. The 4-inch waste in each case was continued up to a point 4 ft. above the fixtures, and each 4-inch vent was made to return right back over the waste lines, and at a point just over the incoming 8-inch sewer, the two 4-inch vents were connected together. This main vent line was in turn dropped down on an angle of 45 degrees and after having a 4-inch cleanout inserted therein, it was connected to the upturned 4-inch side opening of the 8x6x4-inch Y. Each closet bend was also (as the cut will show), revented up into the 4-inch return vent with 2-inch lead and galvanized pipe.

The fixtures opposite the battery of water closets were wasted in the ordinary way, and the back air from them run up to the ceiling, imbedded in the concrete work, run across the room, and dropped into the main 4-inch vent pipe running horizontally back to the main sewer line.

The principle, upon which this job is constructed as far as sanitation goes, is perfect. As to syphonic action taking place in any one of the fixtures (even if all fixtures are flushed at once) there is no possibility whatsoever. We have tested it under the most trying conditions. The admission of air to permit of the easy and unobstructed flow of waste water from the fixtures, comes through from the main sewer in the upper half of the 8-inch pipe, which can never be filled with water. No pressure can be present at any time for the reason that as fast as the water passes out to the sewer a sufficient quantity of air has easy access up and around the loop system. The closets are furnished with seat action flushometer valves; and the main water supply is through a 2½-inch pipe right off of a water main carrying 100 lb. pressure, and the volume is sufficient to permit of flushing all the closets at one and the same time.

The fact that there was a job being constructed like this soon came to the notice of the plumbing fraternity, both masters and journeymen, and we had many callers to see just what was going on. There were no suggestions for improvements made, and about all they could say after seeing what the system would do was, "Well, I'll be d——."

The satisfactory construction of this job, and its subsequent operations free from odors of any kind makes me stronger in the belief that the elimination of the house trap is beneficial from every angle. Do away with the house trap, and, instead of decreasing the work of the plumber you will increase it and promote the welfare of mankind.

SEPTIC TANKS *for* SEWAGE DISPOSAL IN RURAL *and* SUBURBAN DISTRICTS

By Chas. Matthew Mayo

The United States, in fact the world, is awakening to the necessity of proper sewage disposal. The health of the people in cities, and in rural communities demands a solution of this most important problem. Its necessity is manifest. Leading sanitary experts throughout the world are putting forth great efforts in perfecting sanitary conditions. Statistics, as furnished by the United States Public Health Service, point to its importance. The indisputable facts show, beyond a shadow of a doubt, that more than 250,000 deaths, not to mention 4,500,000 cases of sickness each year, result in this country from neglect of simple precautions which would prevent the spread of typhoid, dysentery, summer complaint, and hookworm.

These diseases are primarily due to filth and could almost be eliminated, if not entirely prevented, by the adoption of sanitary measures.

The Research Department of the Indiana State Board of Health, which is under the direction of Dr. J. N. Hurty, an able and experienced sanitary expert, has shown that out of every 100 typhoid cases, 85 have resulted from the use of the out-door toilet. Experts throughout the country, whose opinion has been solicited, have expressed the outcome of their investigations in the following manner:

Cleanliness throughout the country means the control of sewage disposal. Safeguarding the health of this country is a most serious problem. The time is at hand when the entire population can safeguard the health and prolong the life of the inhabitants of the country. Modern living conditions such as the congested population in cities, the closer living conditions in small towns and on farms throughout the entire country demand that a stricter observance of the sanitary surroundings are exercised and the Twentieth Century has brought forth innumerable devices, means and methods of accomplishing this,—but it requires the exercise thereof and the employment of the same, also individual co-operation and compliance with sanitary laws to be observed and carried out. In the suburban districts of large and small cities, in the villages and in the country where the sewer systems are absent, is where the diseases, above referred to, exact the greatest toll. Out of every six persons living in the country, one has typhoid—of those, one in ten die. There are six times as many deaths among babies from summer complaint every year as among persons of all ages who have typhoid.

Over 2,000,000 persons in the United States are afflicted with the hookworm disease. Are we going to continue to be murderers or will we put our shoulders to the wheel and do our part in the readjustment to modern conditions so as to prevent the above calamities which confront us?

It is high time that we avail ourselves of nature's wonderful method of guarding the health of the world. Scientists have shown that everything in nature dies and is subject to decay, from the smallest blade of grass to the highest form of animal life. This process is brought about by the action of bacteria, which are minute, living organisms, invisible to the eye, yet so numerous and so powerful as to be able to literally eat up and digest all dead matter. They are everywhere present,—in water, in air, in the soil and in our bodies. Some of them are known to stimulate certain specific diseases, and the destruction of these by medical treatment is known as the antiseptic process. Others, and the vast majority, are constructive and helpful in their nature, and their work is known as the septic process or the process which destroys or liquifies all dead matter, therefore a septic tank is a tank in which all house sewage or waste is reduced to liquid by this bacterial process.

Some of the filth destroying bacteria work best in the open air, others do their work only in a dark, air-tight receptacle, where the temperature does not drop below 50 degrees. The latter is the class that is formed and operates in a perfectly constructed septic tank. The master plumbers of America are now organizing and putting forth a concerted effort in aiding the people to enjoy modern plumbing, and with it their attention is directed to sewage disposal, which problem has been solved by the advent of the septic tank. The septic tank is not an experiment. It has been proven beyond a shadow of a doubt that the proper kind of construction affords and provides a perfect sewage disposal, the effluent from which can be easily taken care of so that the same is sanitary and harmless. The septic tank is now available to every home, no matter where located, as many jobbers in plumbing supplies throughout the United States are now selling them, making them available to every plumber throughout the United States. An education campaign to instruct the plumbers in the installation of this product and its availability is under way, so that there is no excuse for any home not having sanitary appliances, enjoying their comfort, and safeguarding the health of the family.

THE LETTERS YOU DON'T WRITE

EDITOR'S NOTE:—By using one of these Editorials each week in your newspaper advertising you will help to educate your community in the true facts of plumbing and heating merchandising. Such education will create good will and build your business. The more the public knows the better your service will be appreciated. Take one Editorial a week and reprint it in the upper left corner of your regular advertising space. Have it set in bold-faced type, with rule or border around it, as indicated on this page. This will cause the Editorial to stand out and make it easy to read. The use of these Editorials from week to week will not add a dollar to your advertising expense, but they will help along sales.

IF you speak to a person and that person doesn't speak to you, you don't like it, do you? Of course you don't. And if the person you spoke to ignores you, treats you with loud silence, seems to forget you, you don't like that either, do you? Certainly not. Well, the way you feel when you speak and are not spoken to, is pretty much the way the other fellow feels when he writes you a letter and you don't answer. For when a man writes you a letter he is speaking to you. Whatever he writes about is of enough importance to him to cause him to write or he wouldn't spend time and a couple of cents on you. And if the subject is important to him it ought to be important to you. Even if the subject isn't of importance to you, you owe the writer a little courtesy, which helps to keep his good will, and out of which business is built.

You may or you may not be one of those who think that the letters you don't write save you money. Instead of saving money, the unwritten letters lose you money. And they lose you money in several ways. The letters you don't write weaken friendships, hush the voices of the boosters, and grow within you little habits of neglect which crop out all through your business.

A Lesson in Politeness.

President Andrew Jackson was riding along a road one day with a friend. They passed an old negro. The negro took off his hat and bowed. Immediately Jackson raised his hat and bowed also.

The friend was astonished. "Why, Mr. Jackson," he said, "I'm surprised to see you lift your hat and bow to a negro."

"Why should you be?" replied Jackson. "Do you think I'm going to let any nigger beat me in politeness?"

That should be your attitude in letter writing. You should not let anybody beat you in the politeness of replying to letters which people have spent time and thought in writing you. Neglect a meal, or a bath a day, or the morning paper, but don't neglect your letters. To fail to answer letters is a poor way to add new customers or to hold old ones.

Letter writing, like many other things, is a habit, and, like other habits, it grows as it is practiced. The dealer who neglects his letters is sure to neglect other business points. A total of all the little points neglected is what's the matter with the year's sales. When sales begin to fall off take an inventory of your habits, and nine times out of ten you will find that the falling off is due to the things you didn't do.

Letter writing is one of the biggest things in modern business. It is paper conversation. You can't converse with all the people who might buy from you; neither can you converse with all the people who have bought from you. So write to them, and write and write, and then write again.

The writing habit is one of the easiest habits to cultivate. Think of a letter as a conversation. That is to say, write as you talk. If you were to meet the man you are writing to, you would say what you have to say in your own way. You would be natural; you would be yourself. Be the same in your letters. If you talk like a walking grammar, write that way; if you punctuate your talk with expressions that are a part of you, punctuate your letters with the same expressions. You can make a better impression being yourself than you can by trying to imitate someone else.

How Business is Lost.

It is a good habit to answer letters the day they are received. This grows the habit of promptness.

People never know the business they lose by not answering letters. If they did know they would answer every letter promptly. A man who doesn't get an answer to his letter never comes around to say: "Just for that I'm going to quit you." But that is the way he feels, and frequently he says to others what he would like to say to you. The writer of this series of Advertising Editorials knows a printer who lost thousands of dollars in orders by not answering a letter, which, in itself, had nothing to do with printing at all. An insurance agent had two policies cancelled and lost much new business by ignoring a letter. A plumbing and heating contractor failed to get a big contract because he never answered a letter about an entirely different matter. Dozens of other similar cases could be mentioned. There is much profit in the letters you write, and much loss in the letters you don't write.

Get the habit. Write often. Write as well as you can.

A Series—No. 31.

THE HOUSEWIFE'S BEST FRIEND.

THE dream of every inventor has been to release the human race from back-breaking labor. But, strange as it may seem, the last to be freed from drudgery is woman. Down through the ages she has been the great burden bearer.

The woman of today can make a far better home with far less labor than could her grandmother, whose work was never done.

And who is it that has wrought much of this change? It is the plumber. We don't say this boastingly, but we do take much pride in being the housewife's best friend.

The plumber brings water into the home, thus saving woman many steps every day. The plumber takes the wastes out of the home, thus saving her other steps. Then he provides the sink, the bath, the lavatory, the closet and the laundry tubs, all of which save time and steps, lessens labor, makes life more comfortable and enjoyable, and adds to her health and the health of her family.

Good plumbing and good plumbing fixtures in a home are like "flowers to the living." No woman can be as happy as she should so long as drudgery robs her of her youth and strength.

THE MADVAL BIDET

The best opportunity the plumber has ever had to increase his business

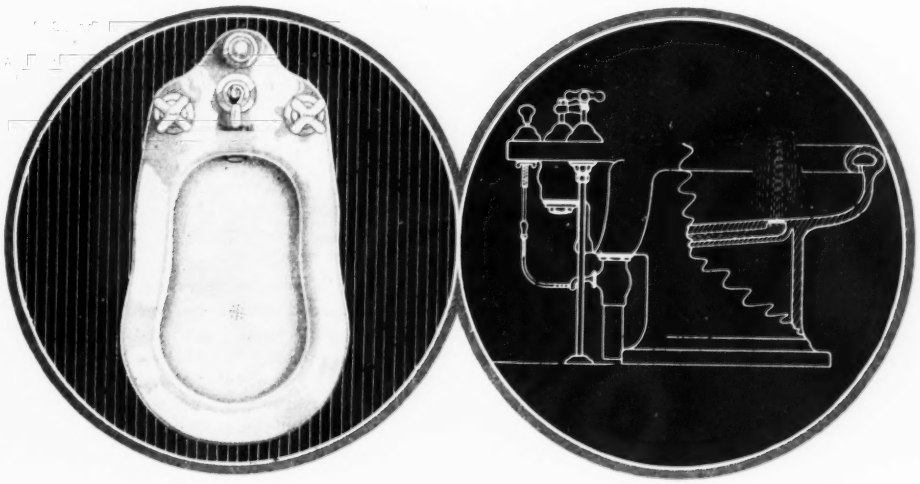
The Bidet offers you a wonderful opportunity to increase your business because it means the sale of an additional fixture in the bathroom.

It also adds prestige to your business by showing your customers that you are prepared to furnish the most modern sanitary and health protecting appliances.

While little known here, the Bidet is a common fixture in Europe and the Latin-American countries. Every year many thousands of them are exported by the manufacturers in the United States.

Send for literature describing the uses of the Bidet

–an Opportunity for you and Health for your customers



The Bidet is the modern health appliance and should be in every bathroom

The *Madval Bidet* fixture is designed to maintain for the user a constant state of cleanliness of the private parts.

It has a supply of hot and cold water to either the center douche as shown in the above illustration or to the flushing rim.

The use of the Bidet is essential for both men and women because the ordinary bath is not sufficient to secure a full degree of cleanliness.

Can you afford not to be fully informed about this most sanitary fixture?

We have prepared a booklet describing the construction and uses of the Bidet. It is yours for the asking.

THOMAS MADDOCK'S SONS CO.
TRENTON, N. J.

The National Trade Extension Bureau

"WILL THIS LIGHTEN YOUR LOAD?"

To the Knights of the Grip:

"Something is always taking the joy out of life," said a plumbing and heating salesman. "One of the worst joy-killers is to have some customer ask the price of appliances or fixtures not commonly catalogued. Then when you refer to your portfolio you invariably find that the pamphlet giving the information you need is not to be found!"

Under present conditions the salesman traveling for a wholesale house has a difficult task to perform. He is required to carry literature that describes and lists all of the appliances and fixtures that his house handles. To carry all of the circulars, catalogs and other literature turned over to the salesman by the sales manager is very often a pack mule's load.

Yet such service is demanded of a salesman by his customer, and he is not always able to deliver, for a reason that is quite evident, yet apparently ignored.

A sales manager recently called our attention to the job he was up against, in trying to supply his men with illustrations and list prices of the fixtures and appliances his house handles. By actual demonstration, he proved that it was physically impossible for him to carry in a portfolio all of the pamphlets, catalogs and other essential literature published by manufacturers whose goods they are selling. He also called our attention to the fact that no two of the catalogs or pamphlets were of uniform size.

We asked him what he would suggest, based on his years of experience on the road and as a sales manager. He replied, that catalogs, pamphlets, and all literature published by manufacturers should be of a uniform size. He further stated that the bureau could be of untold service to the wholesalers of plumbing and heating material of the country and their men if the bureau would inaugurate a campaign for the standardization of catalogs and literature published in the plumbing and heating industry.

His thoughts are as follows: That a manufacturer, when publishing a catalog, should make his pages 8½x11 inches (which by the way is the exact letterhead size). Then pamphlets or other literature showing new or old appliances, or fixtures should be published in booklets or upon stationery composed of sheets exactly the same size as the uniform catalog.

If this was universally done, thousands of dollars could be saved annually. It would greatly simplify the catalog problem of the wholesaler and the men on the road. Every sales manager could then supply his salesmen with a "loose-leaf" binder which would hold sheets of the size adopted. He said he would prefer the 8½x11-inch size, for the binder would then hold all special letters or bulletins issued by the house, important facts regarding stocks on hand, or articles added to their line. Such pamphlets or pages could be easily inserted in the binder used by the salesman and would not be misplaced or lost as is the case today.

As an example: Let us assume that a certain wholesale house was selling bathtubs manufactured by one concern, sinks manufactured by another and brass goods manufactured by still another. If the uniform catalog and bulletin idea were adopted, instead of the salesman being compelled to carry the complete catalog of each of the manufacturers, he could take such pages from each of the catalogs as contained the information he needed, and put these in his binder, eliminating all of the extra load.

An additional advantage of this would be that, if either of the concerns made a new style of bathtub or sink, the cuts and list prices of these new fixtures could be printed on one sheet and sent out to the wholesaler. These new sheets could then be distributed to the dealers and salesmen, who could insert the new sheets in the uniform binder and in this way have an up-to-date catalog at all times.

As a further thought, let us suppose that a manufacturer made but one article. In such a case the manufacturer usually publishes a small booklet of some kind, of a size to fit the pocket. This is often done with the idea that a salesman will carry a small booklet in his pocket and refer to it often. It is the opinion of those who have had experience that such pamphlets are jammed into a portfolio and soon lost. Consequently that line is not pushed. So, again, if a manufacturer would send out his illustrations, descriptions and list prices on uniform size sheets, the sheet, or sheets, illustrating and describing his line could be easily inserted in a uniform binder and properly indexed.

Last, but not least, the adoption of a uniform binder and a uniform size for catalogs and circulars, would place the wholesaler, salesman and dealer in a position where they could keep catalogs up to date at all times; and at the end of a five-year period would not find their catalogs obsolete.

In our opinion, this sales manager has made a mighty good suggestion. We are therefore passing his thoughts along to you. More than 4,500 salesmen will receive this letter. If a sufficient number favor the plan suggested by this sales manager, we will do our bit to lighten your burden by advocating the adoption of a uniform size for catalogs, circulars and pamphlets.

However, if you, as traveling men, are not interested in this project, and we do not receive the proper encouragement from you, we will take it for granted that your experience differs from that of the sales manager with whom we talked. We will also conclude that you are perfectly satisfied with continuing to carry around the small pamphlets and obsolete catalogs.

If, on the other hand, the above suggestions do not meet with your views and you have other plans that you feel will be better, do not hesitate to send them in. We are acting as the clearing house of ideas for the trade. Your views are solicited at all times and upon any subjects affecting this industry.

Yours for lighter burdens,
The National Trade Extension Bureau,
Wm. J. Woolley, Secy. and Mgr.

Maine Master Plumbers' Annual Outing.

The Master Plumbers' Association of the State of Maine will hold its thirteenth annual outing at Cushing's, Long Island, Maine, on Monday, July 17th. The outing will include a clambake and a great program of sporting events. The arrangement committee, which will have complete charge of the affair, consists of Chris. Madsen, Frank Davis and P. A. Mahoney, of Portland, Me.

May Sue Labor Union.

Following the decision of the Supreme Court in the Coronado coal case, the Newport Rolling Mill Co., Newport, Ky., is planning a damage suit for $500,000 against the Amalgamated Association of Iron, Steel and Tin Workers, as a result of the strike at the company's plant which practically closed it down for over a year, says "The Iron Age." The attorneys for the Newport Company are studying the Supreme Court decision with a view to entering a suit in the Campbell County Circuit Court. The Newport company claims that interstate shipments from its mills were interfered with by strikers and that the strike was approved by the Amalgamated Association with headquarters at Pittsburgh last October.

Exchanging Ideas is the Foundation of Progress

What Associations Are Doing

Through United Effort the Individual Succeeds

HEADQUARTERS OF THE N. A. M. P. MOVED TO DETROIT, MICH.

John S. Irvine, president of the National Association of Master Plumbers, has just announced that the office of the Association has been moved from Chicago to 1259-1260 Book Building, Detroit, Mich. Jos. W. Cannon, Jr., will continue his work as executive clerk, and the National office will be pleased to receive as visitors all who are interested in the work of the Association.

ROCHESTER MASTER PLUMBERS MAKE SUGGESTIONS TO ARCHITECTS.

Feeling that it is decidedly unfair for the plumbing and heating contractor to be asked to guarantee results on an installation where someone else has specified not only performance, but also quantities and dimensions, the Master Plumbers' Association of Rochester, N. Y., has drawn up and sent to the architects and engineers of that city a letter pointing out the advances made in modern heating systems, the necessity for a thorough knowledge of the present complicated equipment installations, and suggesting that the architects employ competent engineers of recognized standing to draw up all heating specifications. The letter in full is as follows:

To the Architects and Engineers of Rochester, N. Y:

We are living at a time when the development along all lines of endeavor is exceedingly rapid. We do not recall that advances have been more rapid or more sweeping in any branch of the building trades than they have been in the heating industry.

It is true that steam has been used as a heating medium for a great many years and that water has been used also, but for a considerably less period. Nevertheless the advances made since the advent of the one-pipe gravity return steam heating system are almost as great as was the advance of the one-pipe system over the old "base burner." One must be well informed indeed today to be familiar with the many "vapor systems" and the countless devices by means of which the modern heating plant is made so effective and so efficient.

The manufacturers of boiler and radiators have kept pace with the inventors of so-called "specialties" until today we have updraught boilers and downdraft boilers in both steel and cast iron and we have numerous boilers of the smokeless variety which may or may not be down draught or cross draught.

A great deal of time has been devoted to the proper design of the piping layouts for different types of systems. A vacuum system requires a much different pipe design from a straight gravity system, and a still different design from the so-called vapor systems. Again each vapor system has its own design, particularly adapted to its most successful operation.

There are several types of water systems, the open tank system, the closed tank system, and varieties of each with basement main or overhead supply piping systems, etc. The number of different systems of damper control on the market today is astonishingly large and no two makes of boilers have the same damper arrangement.

Whether a building should be heated by steam, water or vapor has been the subject of many a controversy. If vapor is decided on, then which of the numerous systems should be used? Why is water best for some types of buildings and steam for others? Should the boiler be cast iron, steel, up draught, down draught, smokeless, brickset, portable, or what not?

We wish to make the statement, and in view of the above, we believe you will agree with us, that the selection of the proper type of heating plant and then the proper design of the type selected is not a matter of small moment. We believe that no other part of the building equipment is so important. Certainly on no other depends to so large an extent the comfort of the people, who must spend a large share of their time within the walls of a building, be it house, office or factory.

We have been led to believe that possibly the advances made, as we have so briefly indicated, are not fully appreciated. We are sure they have not been by the great buying public.

The improvement and refinement and the inevitable complications have, we find, run ahead in many cases of the understanding of the user. The ordinary user still thinks that a heating plant is a simple and entirely automatic thing, and that once installed it should run along without repairs or special attention. It seems to be one of the penalties of our advancing civilization that as we advance, the means by which we live become proportionately complicated. We must be able to understand these complications. It is, for instance, amazing when we consider the thousands who have become sufficiently familiar with automobiles, not only to operate them but to adjust and repair them. To have refused to accept automobiles because they were enormously more complicated than the lumber wagon would seem ridiculous.

We might as well make up our minds that heating systems will not become simpler but rather more complex, and we must be ready to meet the situation.

The Associated Master Plumbers of Rochester want the assistance of the architects and engineers of Rochester in advancing the art of heating and particularly in its application. Practices have grown up which while adequate in the past are not, we believe, to be commended now. Some of these practices result in much duplication of effort with its consequent waste.

It has been the practice in some cases, even by engineers and architects of standing to specify not only performance results but also to specify quantities. This it seems to our association is not fair to the contractor. It would seem to us that where quantities and dimensions are specified in detail, the responsibility for results must of necessity rest with the party who specifies the quantities. The contractor should be perfectly willing to guarantee his material and his labor but is it fair to ask him to guarantee results or performance, when he has had no voice in the design? We believe the reasonableness of this position has only to be stated to be appreciated. The architect or engineer is familiar

with his building design as his contractor cannot possibly be, and if he designs the heating system he should, better than anyone else, know the needs to which the heating system will be subjected. He knows the type of construction, how well the walls are insulated, their thickness, the quality of material entering into the building and all the other factors which affect the capacity of the heating plant. Very often the floor plans only are given to the contractor. It is obviously impossible in this case for him to know whether or not he can fulfil a certain guarantee with all the quantities specified.

The conclusion forced upon us is that where the architect or engineer specifies the vital quantities (such as size of boiler or size of mains or size, number and location of radiators), he should not ask the contractor to guarantee room temperatures but only to guarantee his workmanship and material. We believe further that the more or less frequent practice of specifying minimum quantities with the requirement that "if the contractor does not deem the amounts sufficient to meet the guarantee, he must agree to increase the amounts sufficiently to meet the guarantee at no expense to the owner," is harmful and should be discontinued. We do not believe that such a saving clause is worthy of the best traditions of the architectural profession.

In many cases architects have admitted that they are not heating experts and only general requirements are given in their specifications, such as the kind of system and the temperatures desired. While this practice is not subject to the comment in the previous paragraph we know that it leads to much dissatisfaction. No two bids will cover the same quantities or the same layout and it is very difficult to compare figures fairly. The owner is incapable of judging the relative merits of the different proposals and only too often the matter degenerates into a price contest which is disastrous to all concerned. Our suggestion in cases of this kind would be for the architect to hire a competent engineer to write the heating specifications. In this way responsibility is definitely placed, all contractors figure on the same basis and the owner knows what he will get. By a competent engineer, we mean an unprejudiced, reputable engineer of recognized standing. The cost of such a service should not be great and we know of no other expense which is so fully justified.

The above consideration, of necessity, will direct our attention to the practice, now so largely prevalent, of the writing of specifications and the preparation of plans by the manufacturers of specialties. At this time we will not go into the matter at length. There are many reasons why this practice has grown up and there are many obvious reasons why the practice might be criticized. If we might make a suggestion in this case, it would be similar to the previous one, namely, that a competent, unprejudiced expert should pass on the design.

In some cases plans and specifications are prepared by wholesalers, jobbers and manufacturers' representatives. This practice we condemn and believe that everything possible should be done to eliminate it.

The Associated Master Plumbers' whole idea in making these suggestions is to bring our business up to the standard and dignity, which it deserves. It is no longer a hit and miss affair but a business where real engineering skill and ability is required.

We believe that if changes are made along the lines indicated that there will be

a. Less duplication of work in the contractors' offices.
b. Elimination of disputes and controversies.
c. The owners will be safeguarded and protected.
d. Public confidence in our dependability and integrity will be increased.

All of the above aims are most desirable and we earnestly desire your co-operation in bringing them about.

If we have not made ourselves clear or if there are any other points which you think should be discussed in this connection, we should be only too glad to have you communicate with us.

The Associated Master Plumbers of Rochester, N. Y.
Fred'k E. Fladd, Executive Secretary.

Chicago Master Steam Fitters Re-Elect All Officers.

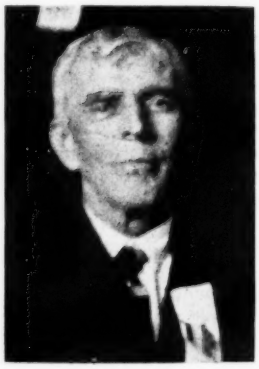
At the annual meeting of the Chicago Association of Master Steam Fitters, held Tuesday, June 27th, in the Hotel Sherman, the association expressed its confidence in the administration by re-electing all officers for another term. The officers of the association are: President, Harry M. Hart; vice-president, F. C. Black; secretary, Charles Glennon; and treasurer, B. W. Brady. G. H. Henrich and G. I. Magan, members of the board of directors, whose terms expired at this time, were also re-elected for the two-year term.

OBITUARY.

William Attlesey.

William Attlesey, president and treasurer of the Attlesey Plumbing Co., 819 Vine Street, Cincinnati, O., died at the Deaconess Hospital in that city on Tuesday, June 13th, following an operation, in his 71st year. Mr. Attlesey had been in failing health for several years. He had been engaged in the plumbing business in Cincinnati about forty years, and he was a member of the Cincinnati Master Plumbers' Association. His wife and a daughter survive him.

William J. Scholl.



Wm. J. Scholl.

William J. Scholl, president and founder of the W. J. Scholl Plumbing Co., of Youngstown, O., was killed almost instantly in front of his home in that city at 11:15 Thursday evening, June 15, being struck by a speeding automobile as he was crossing the street. Mr. Scholl and C. C. Choffin, secretary-treasurer of his company, had attended a party on that night, and Mr. Choffin had just taken Mr. Scholl to his home in his automobile, stopping his car on the opposite side of the street in conformity with traffic regulations. Mr. Scholl got out of Mr. Choffin's car just as it stopped, and walking around in front of it, he started across the street. Just as he reached the center of the street he was hit by a fast speeding roadster showing no lights. He was carried more than 75 ft., as the death car rushed on, without slackening its speed. Finally his body fell to the roadside. Rushing to his side, Mr. Choffin found Mr. Scholl unconscious and dying. His skull was fractured and one leg broken, and he died as he was carried into his home. Mr. Scholl was born in Youngstown, Pa., in 1856, and came with his parents to Youngstown, O., during his boyhood. After learning the plumbing trade and having served several years as a journeyman he opened a plumbing business in Youngstown in 1886, which he conducted with success up to the time of his death. He was a highly esteemed member of the Master Plumbers' Association and he also held membership in several fraternal organizations. He attended the recent annual convention of the Heating and Piping Contractors' National Association, in Buffalo, and of the National Association of Master Plumbers, in Detroit, Mich., and his many friends throughout the country will receive the news of his unexpected and untimely death with regret. The Mahoning Valley Master Plumbers' Association attended his funeral in a body, and many prominent out-of-town master plumbers were also in attendance. His wife, a daughter and two grandchildren survive him.

AMONG THE WHOLESALERS AND MANUFACTURERS

BRUNSWICK-KROESCHELL CO. INCORPORATED.

The Brunswick-Kroeschell Co., of 440-472 West Erie Street, Chicago, has been organized and incorporated to take over the businesses of the Brunswick Refrigerating Co., New Brunswick, N. J., Kroeschell Bros. Co. and Kroeschell Bros. Ice Machine Co., of Chicago. The new Company will maintain the present offices and factories in New Brunswick and Chicago with the various branch offices and will combine the facilities and personnel of the former companies.

NEW SUPPLY HOUSE IN PHILADELPHIA.

The Fabian, Goodman Co. is the name of a new plumbing and heating supply house which has just been opened at 2227 North Fourth Street and 2228 North Orina Street in Philadelphia, Pa. The new company occupies a three-story, a two-story and a one-story building. Oscar Fabian, H. Goodman and George England are at the head of the new enterprise. Mr. Fabian and Mr. England were formerly connected with the Bridgman Bros. Co., of Philadelphia, and Mr. Goodman was formerly engaged in the plumbing business in that city.

OPENS BRANCH IN LONG BEACH, CALIF.

The Pacific Pipe & Supply Co., of Los Angeles, Calif., has just opened a branch house at 1112 West Ocean Street, Long Beach, Calif., in charge of E. J. Duke, who has been connected with this company for several years.

TO OPEN NEW BRANCH IN DALLAS, TEX.

The N. O. Nelson Mfg. Co., of St. Louis, Mo., is making arrangements to open its new branch house at Dallas, Tex., on Saturday, July 15th. The new branch will be in charge of Charles G. Singleton, formerly connected with the N. O. Nelson branches at Salt Lake City, Utah, and Memphis, Tenn.

T. E. B. DIRECTORS MEET IN DETROIT.

The regular mid-year meeting of the board of directors of The National Trade Extension Bureau was held in the Statler Hotel, Detroit, Mich., on Saturday, June 10th. Eleven members of the board were present, according to the official report, and N. Loring Danforth, of Buffalo, N. Y., was a visitor at the meeting representing the Heating and Piping Contractors' National Association. Various matters of business were taken up, among them the proposed changes in the By-Laws of the Bureau, as recommended by the By-Law Committee. The report of the committee was returned to the committee with the instructions that it should make revisions to comply with various suggestions made on the floor, and that the latest revision should again be submitted to the board for a final vote.

It was voted that The National Trade Extension Bureau advise Mr. Marshall, chairman of the Organization Committee of the American Construction Council, that the bureau would not be interested in membership in the council.

The Secretary's report outlined in detail the accomplishment and work of the bureau, which has made, among other things, a survey of the apprenticeship situation in 108 cities "and found that there was a large shortage of apprentices and journeymen in the plumbing and heating trades."

The afternoon session was devoted to the discussion of the definitions of "a plumbing dealer" and a "heating contractor." This question was finally decided, the definitions arrived at and recorded in the report of the meeting were as follows:

Plumbing Dealer: "Any person, firm or corporation equipped to render plumbing services to the public, and who buys, stocks, sells at retail, installs and contracts to furnish and install plumbing appliances, fixtures, accessories or other materials used in plumbing or heating installations shall be defined as a plumbing dealer."

"A heating contractor shall be defined as a person, firm or corporation regularly engaged in business and equipped to render heating services to the public, and who not only buys, stocks, and sells at retail, but also installs and contracts to furnish and install heating appliances, fixtures, accessories, and other materials used in heating installations."

KEMOSHYNE PRODUCTS CO. CHANGES HANDS.

The business of the Kemoshyne Products Co., of Camden, N. J., has been taken over by V. Monroe Dobbins and J. Wm. Mills, Jr. The former will be president of the new company, and the latter treasurer and general manager, while J. A. French will continue as chemist and secretary.

BREAKS GROUND FOR NEW BUSINESS HOME.

The Manufacturers' Tool & Supply Co., of South Bend, Ind., has just broken ground for a new building to house its business at the corner of South Main and Calvert Streets. The new building is to be 55 ft. by 132 ft. with basement and one floor. The building will be of reinforced concrete with pressed brick front, and it is planned to have it ready for occupancy September 1st.

MAY BUILDING PERMITS.

Returns from 199 Cities Show 13 Per Cent Gain Over April and 67 Per Cent Gain Over May, 1921.

A widespread gain in potential building construction is evident from official returns of May building permits to "The American Contractor." One hundred and ninety-nine cities reporting, give a total estimated valuation of $247,192,158 for May permits issued. The valuation for the corresponding month in 1921, which must be remembered as a record-breaking year both in issuance of permits and in contracts awarded, was only $147,107,323 and the valuation for April of this year was only $212,735,607. In percentages, this means a sixty-seven per cent gain over May, 1921, and a thirteen per cent gain over April, 1922.

New York shows a comfortable gain of $1,379,787 over April figures, heading the list with a $41,156,262 valuation. This is a good gain when it is considered that only in March, the metropolitan city overdid itself with a $104,598,548 record.

Chicago jumps from a seventeen million dollar valuation in April to a twenty-seven million valuation in May. There is not a doubt as to a rapid swinging into action in the second city of the United States even though there is still lack of settled conditions in the building trades.

Detroit does itself proud by a jump to fourteen million from a six million dollar April total. Cleveland and Baltimore register appreciable gains. Los Angeles drops from thirteen million to nine million.

	May, 1922 Estimated Cost	May, 1921 Estimated Cost	Per cent Gain.	Per cent Loss
Alabama—				
Birmingham	$ 571,157	$ 766,620	..	26
Arkansas—				
Little Rock	344,596	281,064	22	..
Arizona—				
Phoenix	119,810	196,755	..	40
California—				
Alameda	126,383	79,772	58	..
Berkeley	652,400	284,621	128	..
Fresno	993,500	312,435	217	..
Long Beach	1,502,551	1,428,865	5	..
Los Angeles	9,327,504	7,433,760	25	..
Oakland	2,243,745	1,033,323	117	..
Pasadena	851,924	633,102	34	..
Sacramento	507,210	560,695	..	10
San Diego	677,580	416,298	62	..
San Francisco	4,377,066	1,097,151	298	..
San Jose	166,640	46,254	260	..
Stockton	357,810	84,647	322	..
Colorado—				
Colorado Springs	95,951	63,133	51	..
Denver	2,795,000	807,475	246	..
Pueblo	196,208	67,755	189	..
Connecticut—				
Bridgeport	343,653	349,900	..	3
New Britain	590,986	167,835	252	..
New Haven	577,390	439,970	31	..
Delaware—				
Wilmington	165,453	146,481	12	..
District of Columbia—				
Washington	5,036,285	2,274,561	121	..
Florida—				
Jacksonville	605,596	484,546	24	..
Miami	396,600	615,750	..	36
Pensacola	70,346	54,865	28	..
Tampa	322,272	297,103	8	..
Georgia—				
Atlanta	1,743,054	1,556,282	11	..
Augusta	131,665	146,086	..	10
Macon	127,437	42,492	199	..
Savannah	238,400	142,200	67	..
Idaho—				
Boise	61,705	77,595	..	21
Illinois—				
Aurora	259,667	74,765	247	..
Chicago	27,029,650	2,967,750	810	..
Decatur	414,710	225,000	84	..
Evanston	780,325	219,998	254	..
Peoria	502,175	69,800	619	..
Quincy	304,050	35,200	763	..
Rockford	462,475	167,640	175	..
Indiana—				
Fort Wayne	702,460	420,978	66	..
Gary	293,720	447,835	..	35
Hammond	248,100	96,850	156	..
Indianapolis	3,420,847	1,550,661	120	..
South Bend	849,034	342,025	148	..
Terre Haute	353,887	296,985	19	..
Iowa—				
Cedar Rapids	424,172	707,125	..	41
Davenport	256,138	180,145	42	..
Des Moines	873,175	177,891	390	..
Dubuque	106,994	43,216	147	..
Mason City	94,936	32,624	191	..
Sioux City	375,605	214,475	75	..
Kansas—				
Kansas City	770,428	176,510	336	..
Leavenworth	54,150	21,000	170	..
Topeka	305,967	96,833	215	..
Wichita	465,281	960,622	..	52
Kentucky—				
Covington	183,125	124,200	47	..
Lexington	225,342	75,773	197	..
Louisville	3,339,200	541,450	516	..
Louisiana—				
New Orleans	1,102,375	654,350	68	..
Shreveport	684,299	386,750	76	..
Maine—				
Portland	230,485	115,110	100	..
Maryland—				
Baltimore	4,237,560	2,500,280	69	..
Cumberland	152,830	48,875	212	..
Massachusetts—				
Beverly	18,820	136,100	..	87
Boston	4,258,050	2,112,993	101	..
Brockton	204,255	57,359	256	..
Cambridge	504,180	285,490	76	..
Chelsea	120,135	45,560	163	..
Chicopee	195,760	89,150	119	..
Fall River	1,108,855	57,690	1822	..
Fitchburg	114,538	74,343	54	..
Haverhill	386,540	29,035	1231	..
Holyoke	300,000	196,710	52	..
Lawrence	617,550	314,135	96	..
Lynn	164,620	68,371	140	..
Lowell	281,558	210,395	33	..
Medford	324,718	142,851	127	..
New Bedford	1,295,400	276,200	369	..
North Adams	85,450	21,375	299	..
Quincy	269,142	114,101	135	..
Salem	48,659	42,245	10	..
Somerville	418,030	92,495	351	..
Springfield	865,950	665,820	30	..
Waltham	99,765	50,177	98	..
Worcester	732,721	603,153	21	..
Michigan—				
Battle Creek	133,461	72,055	85	..
Bay City	89,861	45,917	95	..
Detroit	14,153,100	5,203,710	171	..
Flint	321,271	191,175	68	..
Grand Rapids	1,046,015	585,630	78	..
Kalamazoo	158,651	126,185	25	..
Lansing	292,214	198,385	47	..
Pontiac	542,456	54,599	893	..
Saginaw	215,660	221,600	..	3
Minnesota—				
Duluth	651,857	402,125	62	..
Minneapolis	3,780,010	2,535,855	49	..
St. Paul	3,078,758	1,083,436	184	..
Mississippi—				
Jackson	189,550	67,971	178	..
Missouri—				
Kansas City	2,339,600	1,008,500	..	..
Springfield	146,660	104,495	40	..
St. Joseph	86,900	98,795	..	13
St. Louis	2,396,880	1,087,195	120	..
Montana—				
Butte	63,495	27,590	130	..
Nebraska—				
Lincoln	292,122	141,620	106	..
Omaha	1,091,851	788,709	38	..
New Hampshire—				
Manchester	164,085	80,605	103	..
New Jersey—				
Atlantic City	943,114	111,674	744	..
Bayonne	304,210	101,058	201	..
Camden	184,016	166,908	10	..
East Orange	485,932	175,378	177	..
Elizabeth	828,435	328,048	152	..
Hoboken	62,645	92,830	..	33
Jersey City	2,061,135	688,785	199	..
Newark	3,258,406	2,321,609	40	..
Orange	115,685	59,147	95	..
Passaic	279,960	301,400	..	8
Paterson	710,282	359,550	97	..
Plainfield	158,783	155,370	2	..
Trenton	651,294	645,631	0.8	..
West Hoboken	87,855	61,940	41	..
New Mexico—				
Albuquerque	97,972	41,827	134	..
New York—				
Albany	930,189	429,432	116	..
Auburn	71,690	25,649	179	..
Binghamton	817,760	216,605	277	..
Buffalo	2,224,000	1,466,000	51	..
Mt. Vernon	419,865	184,009	128	..
New York City—				
Boro Bronx	8,233,990	5,283,775	55	..
Boro Queens	8,500,108	7,995,390	6	..
Boro Manhattan	11,057,262	18,328,815	..	40

	May, 1922 Estimated Cost	May, 1921 Estimated Cost	Per cent Gain.	Loss
Boro Brooklyn	12,732,000	13,214,203	..	4
Boro Richmond	632,902	1,485,503	..	58
Niagara Falls	271,277	242,406	11	..
Rochester	3,114,279	637,965	388	..
Schenectady	245,108	106,350	130	..
Syracuse	870,279	481,975	80	..
Utica	659,566	155,085	325	..
Yonkers	1,042,900	336,800	209	..
North Carolina—				
Charlotte	173,355	138,180	25	..
Wilmington	71,700	128,900	..	45
North Dakota—				
Fargo	265,421	249,015	6	..
Grand Forks	52,315	26,100	100	..
Ohio—				
Akron	433,976	397,417	9	..
Cincinnati	3,468,845	2,136,495	62	..
Cleveland	6,755,900	2,748,900	146	..
Columbus	1,578,800	1,307,760	20	..
Dayton	674,483	608,968	10	..
Hamilton	208,780	72,035	189	..
Mansfield	121,375	58,250	108	..
Sandusky	58,420	24,740	136	..
Springfield	108,155	126,180	..	15
Toledo	1,328,070	448,495	196	..
Youngstown	595,915	318,545	87	..
Zanesville	142,475	25,040	468	..
Oklahoma—				
Muskogee	77,638	131,745	..	42
Oklahoma City	1,141,563	537,550	112	..
Tulsa	1,065,925	1,056,050	0.9	..
Okmulgee	83,650	161,100	..	49
Oregon—				
Portland	2,916,755	1,454,320	100	..
Pennsylvania—				
Allentown	397,900	255,450	55	..
Altoona	424,296	172,888	145	..
Bethlehem	568,409	111,160	411	..
Easton	163,173	63,745	155	..
Erie	327,084	266,357	22	..
Harrisburg	319,075	223,550	42	..
Johnstown	1,200,000	990,000	21	..
Philadelphia	8,872,050	4,120,660	115	..
Pittsburgh	3,637,013	1,561,263	132	..
Reading	342,875	216,750	58	..
Scranton	649,052	131,545	370	..
Wilkes-Barre	269,058	149,713	79	..
York	69,970	51,330	36	..
South Carolina—				
Charleston	141,295	48,945	188	..
South Dakota—				
Sioux Falls	145,100	117,625	23	..
Tennessee—				
Chattanooga	792,596	262,376	202	..
Knoxville	426,414	354,337	20	..
Memphis	1,081,974	786,812	37	..
Nashville	605,586	249,311	142	..
Texas—				
Dallas	1,388,355	1,329,661	4	..
El Paso	321,508	408,098	..	22
Fort Worth	435,002	326,331	33	..
Houston	1,107,431	846,341	30	..
Galveston	160,728	115,114	39	..
Utah—				
Ogden	139,660	155,720	..	11
Salt Lake City	538,105	409,220	31	..
Virginia—				
Norfolk	833,365	441,291	88	..
Portsmouth	159,536	35,082	354	..
Richmond	952,579	1,386,161	..	32
Roanoke	408,041	223,810	82	..
Washington—				
Seattle	1,643,030	1,566,005	4	..
Tacoma	777,933	373,836	108	..
West Virginia—				
Charleston	309,601	371,170	..	17
Huntington	464,865	392,190	18	..
Wisconsin—				
Kenosha	107,386	93,680	14	..
Milwaukee	3,030,260	2,784,540	8	..
Oshkosh	103,784	56,178	84	..
Racine	251,137	510,297	..	51
Sheboygan	180,729	62,462	189	..
Wyoming—				
Cheyenne	222,955	28,715	676	..
Total	$247,192,158	$147,107,323	67	..

Personal Mention

Theodore Ahrens, president of the Standard Sanitary Mfg. Co., of Pittsburgh, Pa., was in Chicago this week.

Joseph A. Vogel, president of the Jos. A. Vogel Co., Wilmington, Del., who is traveling in Central and Southern Europe this summer, was recently in Venice, Italy. A postal card from this historical city tells us that he is enjoying the trip.

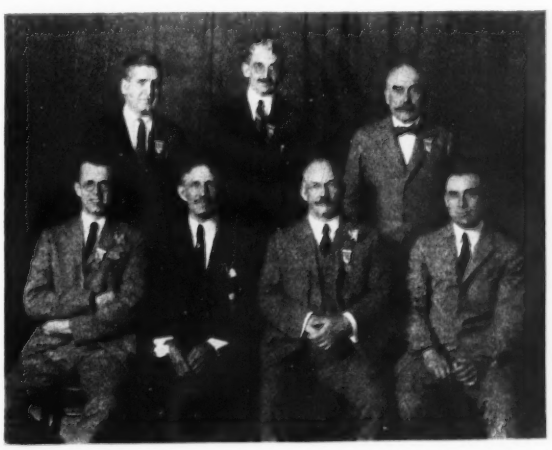
Alex B. Pierce, vice-president of the N. O. Nelson Mfg. Co., of St. Louis, Mo., is at the present time on his annual visit to this company's various branches in the Great Northwest and on the Pacific Coast. He was in Los Angeles last week.

Geo. A. McCrary.

Geo. A. McCrary has just been appointed sales representative for Woodward-Wanger Co., of Philadelphia, to cover Arkansas, Mississippi, Oklahoma, and Northern Texas. Mr. McCrary was formerly connected with the Standard Sanitary Mfg. Co., of Pittsburgh, for fifteen years, covering Southern territory.

O. E. Quitman, L. Colon and **C. C. Jones,** have just been added to the sales force of the Crown Die & Tool Co., of Chicago. Mr. Quitman will make his headquarters in New York City and will cover New York, Maine, Vermont, New Hampshire, New Jersey, and Pennsylvania, while Mr. Colon will cover Michigan, Indiana, Ohio, and Kentucky, and Mr. Jones will cover the Pacific Coast.

Dr. E. Vernon Hill has just resigned as chief of the Bureau of Sanitation, Department of Health, Chicago, in order to devote all his time to the development and manufacture of air-testing instruments and heating specialties. He will do business under the name of E. Vernon Hill Co., with office at 64 W. Randolph Street, Chicago.



H. G. Thomas, C. F. Eveleth, Wm. H. Chenoweth, Jr., E. K. Webster, J. D. Swartwout, Warren Webster, A. B. Knight, all of Warren Webster & Co., Camden, N. J.—From "Domestic Engineering" Photo Taken at the Detroit Convention of the National Association of Master Plumbers.

TRADE LITERATURE

Taber Pump Co. Bulletin Issued.

Bulletin No. 120, an eight-page booklet on the subject of Taber Sump Pumps, has just been issued by the Taber Pump Co., Buffalo, N. Y., containing descriptions, sectional views, specifications and capacities of the company's line of sump pumps.

Folder on Automatic Air Valves.

W. A. Russell & Co., Grand Central Terminal Building, New York City, have issued descriptive literature on the "Latest and Biggest Step in Automatic Air Valves," devoted to this company's No. 7 valve, a new thermo-metal radiator air valve.

Lion Automatic Storage System Pamphlet Issued.

A four-page folder recently issued by the Pittsburg Water Heater Co., Pittsburgh, Pa., announces the "Lion No. 20," a new automatic storage system. By means of illustrations and text the folder explains the operation of the heater and tank.

Three New Folders From Ever Hot Heater Co.

Three small folders have recently been issued by the Ever Hot Heater Co., of Detroit, Mich., designed for distribution to possible users of automatic water heaters, and explaining by means of drawings and photographs the construction of this company's particular heater.

Booklet From The American Brass Company.

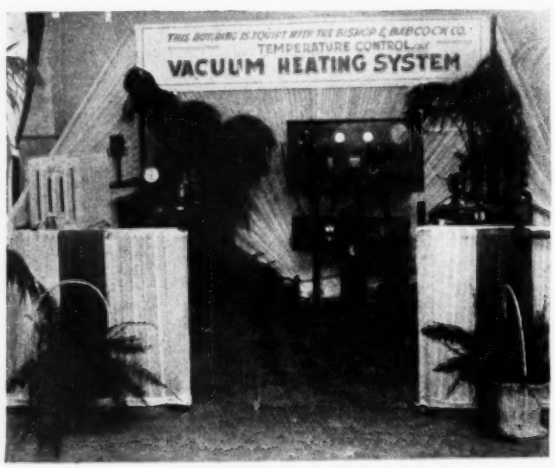
An especially attractive and well-arranged booklet has been issued by The American Brass Company, Waterbury, Conn., on the subject of "Brass Pipe for Water Service." The 26 pages are devoted to data for architects, engineers and plumbing contractors about brass pipe and also to typical installations in which brass pipe has been employed, paying special attention to an explanation of how this pipe should be handled, threaded and fitted on the job.

"Wolff's Plumbing News."

Volume 1, No. 1 of "Wolff's Plumbing News" has just been issued by the Wolff Mfg. Co., of Chicago. The bulletin is very attractive, well written and interesting, and it is the company's intention to issue it every month.

Parker Circulator System of Hot Water Heating.

A sixteen-page booklet is just off the press on the subject of the "Parker Circulator System of Hot Water Heating," a system of heating invented by Parker Bros., of Woburn, Mass. The booklet describes the system, but does not go into the internal construction of the device as complete patents have not yet been granted. The booklet is attractively printed on art paper, and contains drawings showing how typical installations will appear.



The Exhibit of the Bishop & Babcock Co., of Cleveland, O., at the Exposition of the National Association of Master Plumbers, Held Recently in Detroit, Mich.

Twenty Years Ago in "Domestic Engineering"

Saturday, June 28, 1902.

American Heating for Japan.—The first contract ever placed in America by the Japanese government for heating goods has been received by Warren Webster & Co., of Camden, N. J. The Webster low-pressure system will be used, the radiators being furnished by the American Radiator Company. The Crane Company will provide the fittings, and the Chandler & Taylor Company, of Indianapolis, will make the boilers. This first direct shipment is for the Sapporo Agricultural College at Hokkaido.

Picnic.—The McRae & Roberts Co., of Detroit, gave its second annual excursion and picnic to its employes on Wednesday, June 19.

New Plant for an Old Firm.—The Penberthy Injector Co. has commenced the erection of new buildings at Detroit. The buildings include a factory and office building, a foundry and a power house.

Eight-Hour Day.—The master plumbers of Morristown, N. J., granted their employes an eight-hour day beginning June 16.

Home Again.—Wm. H. Gallison, of the Wm. H. Gallison Co., together with his family, has just arrived in Boston after a three years' sojourn in various parts of Europe.

Want Plumbers' Board.—New Orleans is about to undertake her great work of sewer construction. Because of this both master plumbers and journeymen have prepared a bill to provide for the supervision of all plumbing in that city. They ask that the board be composed of the president of the city board of health, the city engineer, three master plumbers and two journeymen.

Andrew Carnegie, Master Plumber.—The great steel master has been admitted to membership in the plumbing fraternity of London, England. A casket of silver, steel and lead, containing the freedom of the city, was presented to Mr. Carnegie. On the lid of the casket is engraved Mr. Carnegie's favorite quotation: "Let there be light."

To Replace Wooden Pipes.—The Boone Heating Company, Boone, Iowa, will replace the wooden pipes laid last year with iron pipes, the former having been found unsatisfactory.

The Same Pay but Shorter Hours.—The journeymen plumbers of Danville, Illinois, have asked for an eight-hour day, with the same pay they are now receiving, which is $3 per day.

Still Higher Wages.—The plumbers' union of Great Falls, Montana, has gotten a raise for its members amounting to $5 for eight hours' work. Because of this the master plumbers have raised the rates of work to the public from 85 cents to $1 an hour.

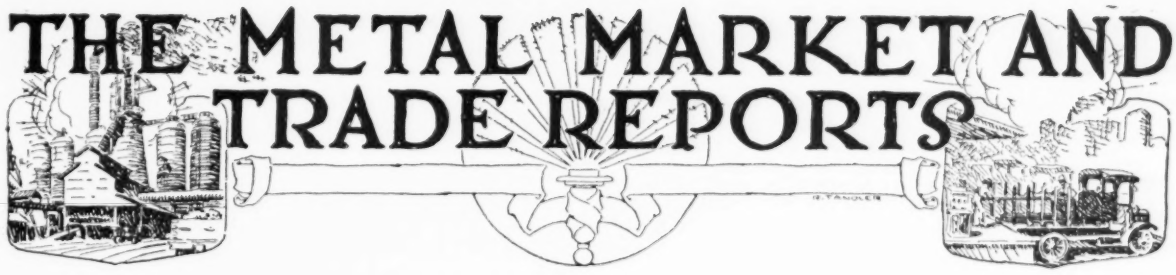
Want Plumbing and Sewer Inspector.—After investigating other cities where plumbing inspectors are employed, Sioux City, Iowa, has decided that it needs an inspector.

The Metal Market.—There have been big advances in prices during the past year. A year ago, Foundry 2, Pittsburgh, was $15.00; now it is $21.50. In 1901, Bessemer Pig, Pittsburgh, was $16.00; this week it is $21.75.

Change Their Location.—London, Ontario, Canada, has offered such inducements to the Guelph Iron & Steel Company that the company is removing from Guelph to London.

Lighting and Heating Exposition.—The exposition will be held in the Crystal Palace, London, for six weeks, beginning December 6, 1902.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The steady gain in production of finished steel last week has very gradually lessened the high pressure of the market for prompt shipments, with the result that there have been some slight signs of reactionary price movements. This has been especially the case with the black and galvanized sheet trade. Operations of sheet mills have been very heavy and gaining from week to week. The result has been a more rapid delivery against contracts. This reduction of unfilled orders and accumulated business has caused a less assurance of makers in their quotations. Competitive conditions have also appeared in the black and galvanized sheet market with the result that the carload and less than carload figures have slipped back to 3.15 cents base for black sheets and 4.15 cents for galvanized on carloads and differentials for smaller lots. The only actual shortage reported is for full-finished sheets which are apparently out of the market for some time to come. Automobile buyers have tendered as much as $10 a ton premium on this grade of material without getting any. The sheet bar market has settled more evenly at $35 but there are a good many running contracts being filled at $33.

Wire and nail production has been well maintained with a somewhat easier tone to the buying. Prices are unchanged in the quotations at $2.40 and $2.50 per base keg. The leading interest continues to quote the minimum figure. Independents holding the $2.50 per base keg for nails are taking on business at that basis. It is noted, however, on current trade, some competitive prices have been made and at least one independent nail maker dropped the base price to $2.40 per keg and named $2.45 for less than carload lots.

The activity of the buying of steel strip has been maintained and some of the strip makers are withdrawing from third quarter business. The automobile buying of the material has been exceptionally active. The cold rolled prices are holding firmly at 4 cents. There are, however, some contract orders still being supplied at 3.75 cents and 3.85 cents. On hot rolled strip 2.40 cents appears to be quoted more evenly.

Activity seems to be more pronounced in the West than in the East. Railroads and oil tank builders have fairly swamped Western mills with orders. This busier condition is reflected in the higher rate of operation in the West, in the higher level prices, in the more pronounced fuel scarcity, and in the turning of Western consumers to Eastern mills in many instances for orders.

The coke scarcity is the chief topic of the iron trade. New York agents are constantly scouring the Connellsville region in behalf of customers, and from two to five cars of coke are about the limit that they can pick up. Current sales of foundry grades are made at $8.50 and a new high quotation of $9 has been heard.

Pig iron inquiry is very slight in the East, and the absence of sales makes it rather difficult to establish the trend of prices, though it is probably upward in line with higher prices for coke. High silicon iron is especially difficult to obtain.

In the Youngstown district two more furnaces have just blown in, making the number active eighteen of twenty-six, instead of six at the low point in the depression. Seven have been brought in since the coal strike started and two suspended, a net gain of five.

At Birmingham iron makers feel confident that the all around base for fourth quarter iron and what is left of third quarter capacity, which is little, will be $20. The spread of $1.50 was occasioned by one large maker who, it is believed, wished to be assured of third quarter capacity bookings before advancing from $18.50 base.

Prices for pig iron are quoted as follows:

No. 2 foundry, Pittsburgh	$25.96
No. 2X, East del., Philadelphia	27.32
No. 2 Southern, Birmingham	18.50
No. 2 foundry, Chicago, furnace	23.50@24.00
Basic valley, furnace	25.00
Bessemer, Pittsburgh	26.96

Copper.

Last week in copper was unsatisfactory from the standpoint of sellers, sales having been made at as low as 13⅝ cents delivered in small lots. Cheer was taken from the fact that prices had not receded further in view of the lull in buying. Prices have not receded as rapidly as the advance through May, when prices recorded a net gain of 1 cent. The decline in June so far has been only ⅛ cent, and sellers do not believe that the level will be lower, because a slight improvement in buying will send prices at least ¼ cent higher. Toward the end of the week there was some improvement.

Lead.

Outside holders of lead in the West have made slight price concessions. Demand is very slight and consumers are apparently waiting to see what the price trend proves to be. Though there have been some inquiries for large tonnages business has not been closed. Prices are 5.75 cents New York, and 5.55 cents East St. Louis.

Tin.

There was very little net change in tin prices last week. London prices were 5s higher at the close than the previous week, while Straits tin was ¼ to ½ cent lower. Sterling exchange, which had been the chief disturbing factor all week, was 5 cents lower. The fluctuations of sterling exchange made buyers wary of entering the market. Not much buying developed in New York until the last of the week.

Standard tin was nominally ⅛ cent lower at 30⅝ cents. Ninety-nine per cent tin was ⅛ cent lower in spot. Quotations were: Spot and June, 30 cents bid, 30⅝ cents asked, and 30⅜ cents settling price; July and August, 30 cents bid, 30½ cents asked, and 30¼ cents settling price. Tin arrivals in June were: Atlantic ports, 4,045 tons; Pacific ports, 20 tons. Tin afloat was estimated at 6,740 tons.

Zinc.

The zinc market has not fallen off more because producers have been so well booked for June. Outside lots for June are being well cleaned up. The minimum price continues at 5.30 cents East St. Louis, with 35 points higher for New York delivery.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum Powder	60 to 61 cents per lb.
Aluminum in 50-ton lots, 99 and purer	20. cents per lb.
Antimony, Chinese brands	5.00 cents per lb.
Antimony, W. C. C. Brand	5.55 cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying	Selling
Copper, heavy	11 to 11¼ cents	11½ cents
Copper, light	9¼ to 9¾ cents	10 cents
Brass, heavy	6 to 6¼ cents	6½ cents
Lead, heavy	4½ to 4¾ cents	5¼ cents
Tea lead	3½ to 3¾ cents	4⅛ cents
Crucible copper	11½ to 12 cents	12¼ cents
Zinc, new scrap	3 to 3½ cents	4 cents

Chicago Old Metal Market.

The following are the current prices for old metals:

	Buying	Selling
Crucible copper	11¼ to 12 cents	12½ cents
Heavy copper and wire	10½ to 11 cents	11⅜ cents
Light copper	8½ to 9 cents	9½ cents
Red brass	8¼ to 8½ cents	9 cents
New brass clippings	8 to 8½ cents	9 cents
Heavy yellow brass	6½ to 7 cents	7½ cents
Light brass	5 to 5¼ cents	5½ cents
Heavy lead	4¼ to 4½ cents	5 cents
Tea lead	3¼ to 3½ cents	3¾ cents
Zinc	3 to 3½ cents	4 cents
Block tin pipe	22 to 24 cents	24⅝ cents

In the New York Supply Market.

New York, N. Y., June 26.—The main problem in the New York plumbing and heating supply market continues to be the difficulty of obtaining renewals of stock in certain lines, the manufacturers being taxed to capacity and still in many cases several months in arrears. While all lines are in good demand and prices are firming, in some cases to the verge of further advances, brass manufactured goods may perhaps be noted for a particular spurt of activity, after a long period of comparative dullness. The advance of from 2½ per cent to 5 per cent which was made in isolated cases last week is now being generally adopted and the new level is being well maintained.

Soil pipe, so long the Cinderella of this market, is still firming, with another upward move quite among the possibilities. It is conceded by some jobbers that any further advance will be inspired by shortage of supply rather than by the unprofitable price levels previously claimed to exist, the latter factor having been taken care of in the successive advances noted in previous reports. This, however, is the attitude of certain jobbing houses and would probably not be conceded by the manufacturers.

Steel pipe is also active for building construction interests using this commodity which includes a large proportion of the present program under way.

Wrought iron pipe of the cheaper grades is similarly active and genuine wrought iron pipe, is much stronger now than it has been owing to the definite announcement that the building program of the Metropolitan Life insurance organization is to go ahead on a large scale, and that the policy of this company to use only the best wrought iron pipe is to be adhered to. There is also noted a slight revival in better class residential building construction, although this is not on a very extensive scale as yet.

Bathroom equipment continues in good demand, in so far as the cheaper grades are concerned, the higher grades of this line continuing more or less inactive as compared with normal years. There is a certain amount of activity in remodeled installations as to bathroom equipment, the warm weather producing a greater appreciation of shower installations.

Heating equipment in the cheaper grades is fairly active, in conformity with the class of building construction now under way, but the tendency previously noted to defer this part of the home equipment is still in evidence. This, however, should help the fall season along, so long as jobbers realize the necessity of not being caught napping this time, as happened last year. On that occasion the plumbers were obstinate in buying on a hand-to-mouth basis, and the jobbers followed their lead rather than buy ahead in a market that was inclined to be unsteady.

Brass manufactured goods, as previously noted, are in better demand than they have been for some time past and prices continue to strengthen, following on the action of certain houses in notifying advances. As copper, which enters into the production of brass to something like fifty or sixty per cent, advanced so much in the winter and spring months, it has been a matter of surprise that brass manufactured goods remained at low levels so long, and the present advance is probably well justified.

The feeling among jobbers in the market is on the whole one of optimism, qualified by an opinion that the situation is by no means normal yet and doesn't show any signs of becoming so at any early date. The previous lack of demand has been replaced by a shortage of stocks, and while price slashing is no longer so bad as it was a while ago, this improvement is not having its full effect as jobbers, free to ask for fairer prices, cannot in many cases get the goods to deliver.

"Soil pipe is soaring still," said a representative of Arnold Behrer & Sons. "While no further advance has been announced, anything may happen. That is the feeling among the trade. The whole situation continues abnormal. First we had the lack of demand and the season starting late, and then there was a period of acute price slashing, with every man's hand against his neighbor and many better class houses standing aside from the struggle rather than sell at unprofitable levels; now we've got the demand but we can't get the material."

"The situation continues as it was last week," said C. F. Rothfuss, of W. V. Egbert & Co., Newark, N. J. "New Jersey and New York are much the same so far as that goes. Demand is fairly good and prices are satisfactory, subject to a certain amount of under-cutting, but deliveries are not as they should be. We could sell more if we could get the goods, but no manufacturer will promise delivery in any reasonable time, even to his regular customers."

"The problem now is one of shortage of material," said George H. Burford, of the McMann & Taylor Co., New York City. "The mills are over-booked with orders and in some cases are actually turning down business. The man who took a chance and bought ahead is the one who is profiting nowadays for his foresight. There is a fair amount of business offered, although the situation in this respect is by no means normal yet."

In The Chicago Supply Market.

Chicago, June 28.—Indications of a slight lull in the unusually heavy demand for plumbing and heating supplies have been welcomed by the manufacturers of practically every line, as they see, in these indications, a possible opportunity to get caught up in the orders that have almost swamped the plants and mills for the past three months.

The present week marks a period between the closing up of spring building and the opening of the fall work. The demand for brass, enameled ware and pottery still remains heavy, due to the fact that a large number of contracts are being completed, and this material is the last to go into a job.

Prices with the exception of soil pipe, remain unchanged, despite the fact that the persistent rumors of increases have been in the air for a number of weeks. Steel pipe, for instance, is one commodity on which a change has been expected for some time. Materials are hard to get at the mills; the coal strike has seen to it that the amount of coke available for manufacturing purposes is cut far below normal, and conditions of this kind are generally regarded as significant as far as prices are concerned.

There is plenty of business for everyone in the boiler and radiation field, but so far, the leading interests in this field have had little trouble in keeping up with their orders. Within a short time, however, the heating season will be due to open up strong, and manufacturers are looking for a heavy demand within the next few months.

The demand for soil pipe continues active, although calls are not as insistent as they were 60 or even 30 days ago. There has been an increase in price to the jobbers of $5 a ton, on the part of three manufacturers of this product. This, it was explained, is necessary for the manufacturers' protection, as shipments are delayed and it is impossible to predict conditions for the next month. Labor troubles in the Southern district have aggravated the situation, creating further uncertainty and curtailing production to a considerable extent.

B. A. Schutz, of the Central Foundry Co., commented on the market briefly, saying: "Although the demand for soil pipe is not as heavy as it was some time ago, there is still a good volume of business, enough, at any rate, to prevent us from catching up with our orders. The tonnage we are booking now is just about equal to what we are able to ship, so while we are not catching up, we are no longer falling behind in filling our orders."

Harold Cross, of the United States Sanitary Manufacturing Co., says: "Business couldn't be better, there is a great demand for enameled ware that has created a shortage in all lines. The higher grades of material are showing up especially well, and the shortage in this line is proportionately greater than in the cheaper goods."

Jobbers of plumbing and heating supplies report that the market is somewhat dull this week as compared to what it has been for the past two months, but the temporary lull is by no means a depression, in fact it is welcomed in all quarters as a much needed "breathing spell" between active seasons in the building industry.

Steam Heat with Electric Generators.

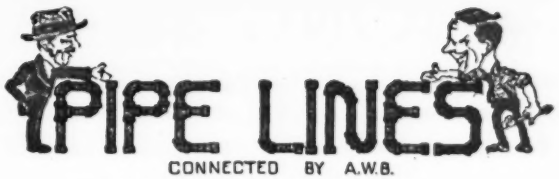
One of the most powerful and modern heating units in the world, an electric steam-generator, was constructed in Philadelphia a short time ago and installed in the plant of the International Paper Mills at Niagara Falls. It is a 6,000-kilowatt generator, similar in plan to the larger one recently installed in a Canadian paper mill.

Water is vaporized directly by the passage into it of a high tension current. Steam is developed much faster than is possible by ordinary heating methods. Thermal efficiency of better than 98 per cent is said to have been shown in the Canadian plant, after accurate and exhaustive tests of the current consumption. This loss included heat escape from 100 ft. of pipe.

Frank Hodson, who is president of the local company, asserts that steam generating plants of this character are bound to be installed in hotels and office buildings and stores, once electric companies realize what a chance this affords for marketing surplus current during "off-peak" hours. Mr. Hodson points out that a cheap rate should be granted for the use of current in other than heavy-duty periods of the day. The high-tension transformers can then be thrown in for this special work, and steam or hot water generated in a short time. He claims the cost for this method is but little more than present costs when power available is not employed for this purpose.

Local engineers comment that with this method of heating water, "boiler insulation" takes on a new and startling signficance. "Think," said one, "of turning on a steam cock without a rubber glove, and being tickled by a 10,000 volt spark for your ignorance."

Ottumwa, Ia.—Lawson & Brady have opened a branch of their plumbing business at Mt. Pleasant, Ia.



PUTTING THE BENDS IN THE LETTER "N."

The P's have been coupled and laid aside,
To be used when the time is ripe,
For running the column of fresh Pipe Lines
And putting the P's in Pipe.
So the very next thing we have to do—
If we're to make the job progress—
Is to go to work with a right good will
On the L, I, N, E and S.

It seems to puzzle some of the boys,
And also some of the men,
How to make in a workman-like way
The bends in the letter N.
I've worked at this pipe fitting trade quite a bit,
And I'm working at it still,
And I find that the plumber who makes a hit
With the one that pays the bill,
And the plumber who always wins with the boss—
Gets as solid as a rock—
Is the plumber who can do a nice, neat job
Without waste of time or stock.

Then why use fittings and nipples any more
Than are needed to gain the end,
When the job may be quicker and better done
With just an open return bend?
Take a piece of pipe with a thread on each end,
On each end screw a return bend;
Then screw them up well and screw them up tight,
One faced to the left and one to the right;
Then into each bend, with vim and with snap,
Just screw a short piece of pipe and a cap.

Now you have a perfectly good N—
Fit to be used any time—
And it's a letter that's right enough
To complete any Pipe Line.
I'm sure you will all agree on this point,
And acknowledge the fact, by Jove!
It's just as easy as wiping a joint,
Or making a coil for a stove.

JAMES McINTYRE, Seattle, Wash.

CALL THE FIRE DEPARTMENT.

The householder smothered his wrath and descended to the basement. "Are you a plumber?" he asked of the grimy individual who was tinkering in the cellar.

"Yes, sir," answered the man.

"Been long in the trade?"

"'Bout a year, sir."

"Ever make mistakes?"

"Not on your life."

"Well, then, I suppose it's all right," said the householder. "But the chandelier in the drawing room is spraying like a fountain, and the bathroom faucet's on fire!"

N. E. W., Osterville, Mass.

HE WAS SO IGNORANT.

He thought Ante-Bellum was a female relation.

PEAK, Denver, Colo.

PLENTY OF TIME.

A boy asked a long-haired man the time of day. The man replied, "Ten minutes to nine."

"Then," said the boy, "at nine o'clock get your hair cut."

The boy ran away, and the man ran after him. Running into a cop at the corner, the cop asked, "What's your hurry?"

The man paused and between pants gasped, "See that boy? He asked me the time. I told him it was ten minutes to nine. Then he said, 'Get your hair cut at nine o'clock'."

"Well, what are you running for?" said the cop. "You've still got eight minutes."

L. I. F., New York.

The oldest weekly in the world is the Saturday Bath.

PLUMB, Birmingham, Mich.

No man is a hero to his bootlegger, says the "New York Tribune;" but every contributor to Pipe Lines is a hero to me.

A. W. B.

AMONG THE PLUMBING AND HEATING CONTRACTORS

FIVE MILLION DOLLAR APARTMENT PROJECT FOR CHICAGO.

A row of large apartment houses, which will contain, when finished, over four hundred apartments of four, five and six rooms, is being planned by a Chicago promoter, and plans for the first of the five units are already being drawn by the architects. The first building, a fourteen-story structure, to cost $950,000, will soon be under construction, and the remaining four units will be completed about a year apart.

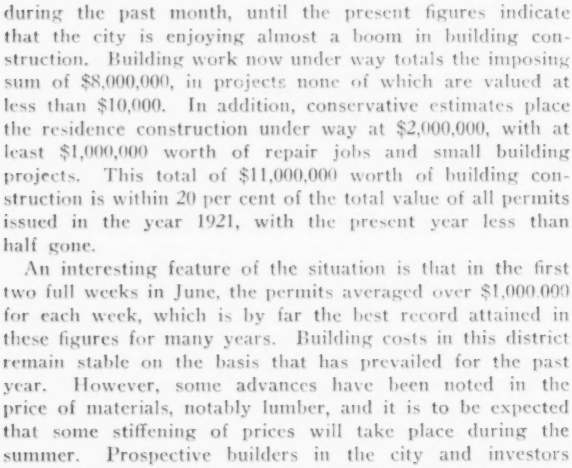
Large plumbing and heating contracts will be involved here, for the five and six-room apartments will contain two baths each, and the others one.

While these apartments will command high rents, there is a large amount of building now going on that consists chiefly of small and medium-sized apartments. Permits taken out in the office of the Building Commissioner from June 1 to June 23 exceeded $21,000,000, and of these permits 244 were for apartments and 467 for single-family residences.

STATISTICS SHOW BUILDING BOOM IN SEATTLE.

Building activity in Seattle, Wash., has steadily increased during the past month, until the present figures indicate that the city is enjoying almost a boom in building construction. Building work now under way totals the imposing sum of $8,000,000, in projects none of which are valued at less than $10,000. In addition, conservative estimates place the residence construction under way at $2,000,000, with at least $1,000,000 worth of repair jobs and small building projects. This total of $11,000,000 worth of building construction is within 20 per cent of the total value of all permits issued in the year 1921, with the present year less than half gone.

An interesting feature of the situation is that in the first two full weeks in June, the permits averaged over $1,000,000 for each week, which is by far the best record attained in these figures for many years. Building costs in this district remain stable on the basis that has prevailed for the past year. However, some advances have been noted in the price of materials, notably lumber, and it is to be expected that some stiffening of prices will take place during the summer. Prospective builders in the city and investors apparently realize that prices have passed beyond the lowest ebb, and will soon commence to rise, and that further delay in proposed construction work would be unwise.



Mr. and Mrs. W. V. Roesch, of Shawnee, Oklahoma.—From "Domestic Engineering" Photo, taken at the Detroit Convention of the National Association of Master Plumbers.

The Board of Public Works in Seattle, Wash., has approved an ordinance which authorizes and directs that body to construct public comfort stations at four different points in the city, as follows: At the intersection of Green Lake Way and East 72nd Streets; at the eastern terminus of the Madrona Park car line; in the vicinity of California Avenue and West Alaska Street; in the Ballard district, at a location to be selected that will best serve the district.

Neil McDonald, 339 Henry Building, Seattle, has received the contract for the completion of the Fourth Church of Christ, Scientist, to be built at 8th Avenue and Seneca Street. The improvement will cost $150,000.

KANSAS REPORTS SHOW GREAT SCHOOL BUILDING ACTIVITY.

A large amount of school construction, remodelling and renovation is reported from various towns of moderate size in the state of Kansas. In some instances plans are being prepared, while in other sections contracts have been let and work is progressing rapidly toward completion.

Johnson & Yoxall, of Wakeeney, have been awarded the heating and plumbing contract on a new consolidated school at Menlo, Kansas.

Bonds for $67,000 have been voted at Hugoton for a new high school. Mann & Gerow, of Hutchinson, have been retained as architects.

Preliminary plans are being made for a $40,000, eight-room high school at Jennings. This building is to be two stories, of brick, stone and wood joist construction.

Plans for a consolidation of a district around Mayfield, Kansas, are being made. A $40,000 grade school is now contemplated, but if consolidation is effected, the building will be larger.

Heating, plumbing and wiring contracts will soon be let on a $75,000 school at Caney. J. L. Zollars, of Independence, has been awarded the general contract.

The Sell-Orr Heating Co., Independence, has been awarded the heating and plumbing contracts on the $225,000 memorial hall in that city.

The W. T. Polley Heating & Plumbing Co. has been awarded the heating and plumbing contract on a $175,000 high school at Liberal, Kansas, at $24,665.

Mann & Gerow are preparing plans for a $15,000 manual training and domestic science building at Florence, Kansas; a $10,000 grade school at Penokee; and a $10,000 kindergarten school at Osborn, Kansas.

The Salina Plumbing Co., of Salina, was the low bidder on the plumbing in a girls' dormitory at Manhattan, without alternates, at $13,775.

Wichita.

A date for bids will be set soon for the $1,000,000 high school on the Roosevelt Tract in Wichita. The new school will be of brick, stone, and reinforced concrete construction, and will consist of several buildings.

The H. I. Ellis Construction Company is starting the construction of a $200,000 St. John's Academy. The heating and plumbing will soon be awarded.

INDIANA BUILDERS TO CONSIDER STATE CODE.

All of the building interests of Indiana probably will be called together in Indianapolis within the next few weeks to determine a course of action toward the ultimate establishment of a state building code. The need for codifying and standardizing general building requirements, making them uniform throughout the state, has been seen for some time by men connected with the building industry, and it is proposed to get things started this year so that a suitable bill can be prepared for presentation at the next session of the state legislature.

As conditions are now, each locality in the state has its own individual building regulations, or none at all, except for certain rules of the state fire marshal, and the state board of health. Things which would be permitted in one part of the state in the construction line are not permitted in other parts. It is pointed out that with the establishment of a uniform state building code, certain essential construction standards would be set for architects, plumbing and heating engineers and contractors to go by, and that by consulting the one code they would know exactly what was expected of them, no matter in what section of the state they happened to receive a contract. A call is to be sent out soon by the Associated Building Contractors of Indiana to the architects' society, the engineers' organizations, various state officials and labor representatives to meet some time in July with representatives of the Associated Building Contractors of Indiana to discuss plans for getting the state code under way.

MEMPHIS BUILDING PERMITS DOUBLE LAST YEAR'S FIGURES.

Although building activity at Memphis slowed up during the middle of May, the last week of the month made a good record. During the month 427 permits were taken out, aggregating in valuation $1,081,974, as against 72 permits aggregating $786,812 the preceding year. The figures for the first five months of this year at Memphis show 1,852 permits valued at $5,876,504 as against 1,089 permits valued at $2,516,597 the preceding year.

It is indicated that work will start about September 1st on the new hotel at North Main and Adams Streets, to be erected by the Tri-States Hotel Co. and to cost around $1,000,000. Plans were made by Architects Barnett, Haynes and Barnett, of St. Louis; Jones and Furbringer, of Memphis. The hotel will have about 375 rooms with baths and be fourteen stories, of brick construction.

Mr. Fischer, of the Fischer Heating Co., South Third Street, is spending a few weeks in Europe visiting his relatives.

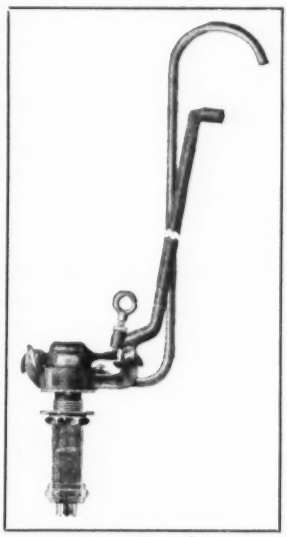
The plumbing and heating contract for the Soldiers and Sailors Memorial Auditorium at Chattanooga, Tenn., has been awarded to Fred B. Cantrell Company of that city.

James Lowe, Vance Avenue, has completed extensive plumbing and shower bath and fountain installations at the new Log Cabin Place of Fred Huston, at 148 South Main Street. This contract amounted to about $20,000. The building is equipped with tile floors, marble wainscoting and a great many showers and plumbing features.

Hughes Heating Co. has the contract for the heating on a modern high school building at Shaw, Miss.

The Memphis Heating Co. has just been awarded the contract for the steam heating on the Young Men's Hebrew Association Building, at Nashville. This company also has the contracts for: The vapor heating on the Dunlap Apartments, the power work in the remodeling of the General Hospital on Madison Avenue, the vapor heating on the home of H. K. Reese, Central Avenue, and the hot water heating in the residence of W. W. Fischer, South Boyd Street.

Wolverine Dale Ball Cocks



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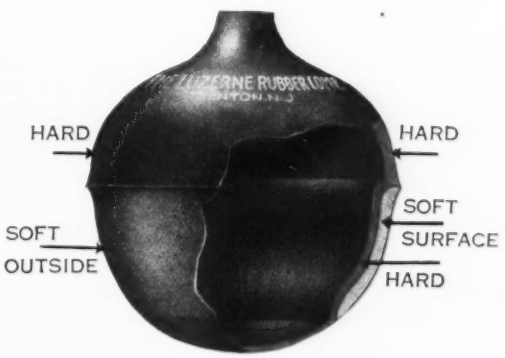

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You can identify Square "Gee" Fittings by the Square G stamped on every fitting. Another way is by the deep, smooth countersinking.

THE GRABLER MANUFACTURING CO.
CLEVELAND, O.

HOME BUILDING PREDOMINATES IN MOBILE, ALABAMA. BUNGALOW TYPES PROVE POPULAR.

More than 200 new homes have been erected in Mobile since the beginning of the year, while approximately $750,000 has been spent in building in the business section on structures already completed or nearing completion, according to announcement by Wright Smith, city engineer. The total valuation of homes for which permits have been issued since January 1 is in excess of $200,000, the average cost being approximately $2,000 each.

May led all months so far this year in the number of permits issued, more than one-fourth of the total permits being issued during that month. The call for permits has shown an increase month by month since the first of the year, according to the engineer. In most cases, the permits were for homes of from three to five rooms, while the majority of the new residences are of the bungalow type.

More than 100 reconstructed houses from the Chickasaw shipbuilding plant have been erected in Mobile during the past five months. These houses, which are virtually new, are moved by the Chickasaw company and reconstructed on the lots of the purchasers. They were built by the shipbuilding company for its employes during the war.

The largest apartment building erected is the St. Charles Apartments, located at Government and Charles Streets, one of the most prominent residential sections of the city. Its cost is approximately $200,000.

One of the largest and most beautiful buildings constructed in the city is the Scottish Rite Cathedral, at St. Francis and Claiborne Streets. This massive structure, classing with those costing in excess of $200,000, is of reinforced concrete and is four stories in height. It is pyramidical in shape and contains the largest auditorium in the city, capable of seating more than 2,000 persons.

Four stores and an ice plant are included in the business houses completed during the last six months.

As a result of the clean-up and fix-up campaign, many property owners are repairing their plumbing, installing new fixtures and otherwise improving their premises.

NEW MILLION DOLLAR STRUCTURES FOR SAN FRANCISCO'S SKYLINE.

That all branches of the plumbing interests should move steadily along, notwithstanding some drawbacks, and should look with hope to the future, is to be expected in California. Forces and capital that have been developing new lands for high-priced and valuable crops, and new power and resources for great industrial plants, are beginning to bear fruit. The last U. S. Census of Manufacturers places the total product of the state for 1919 at over $3,000,000,000. Another surprising fact is that manufactures now constitute 64.4 per cent of this total, or over $1,900,000,000. Agriculture comes second with nearly $588,000,000. That these figures are being rapidly multiplied is evident to the most casual observer.

The only wonder then, is not that the cities of California have been having a great building revival, but that they have gone so long without it. The investment of capital in great industrial enterprises, however, has diverted from building its normal share, and the building program to date has been simply a frantic effort to catch up and relieve a situation that was becoming distressing. It has not yet caught up and in no wise has it encroached on the future.

San Francisco has been more than busy in these various developments, more interested in resource and production development, than in building. But all these resource and production developments demand a home, offices, and a city up to date. So that movement has begun, and only begun. Most of the building has, of course, been smaller, but a few

in the million dollar class are already marking the sky-line. The $2,000,000 Standard Oil Building is one of these. The Matson Navigation Company is still driving piles four or five stories deep for its new $1,500,000 building. The plans are completed for the new million and a half building of the Pacific Gas & Electric Company. The Union League Club building is now under way; the Elks Club building will soon be under way; The Granada, Golden Gate, and Loewe-Warfield theatres are already in operation; all of the million dollar class.

The Elks Club Building will be on Post between Powell and Mason, a ten-story store and club building; it will contain 100 hotel rooms, gymnasium, and other equipment.

Figures are being taken on a $250,000 building for the Providence Securities Company, to be located on Market Street west of Sansome Street. It will be a seven-story reinforced concrete structure.

Architect Herbert Schmidt is preparing plans for a hundred thousand dollar building for the San Francisco Savings and Loan Society, to be located at Seventh Avenue and Clement Street.

But the fact that within a considerable radius of the financial center of the city, rents at a single bound have recently been doubled is proof sufficient that this building is not by any means enough.

SACRAMENTO, CALIFORNIA, BUILDERS NEGOTIATE WAGE SCALE.

The Sacramento Builders' Exchange and the Sacramento Trades Council are trying to agree on a scale of wages. The Builders' Exchange proposes a wage reduction. W. F. Leflar, business agent of the Building Trades, thinks that with all skilled labor employed and the demand greater than the supply, a reduction will not be insisted on, and the proposition has not been taken seriously by the unions. He further states that such a reduction might interfere with building by causing a number of men to go to the bay region where scales are reported higher.

A. W. Norris, president of the Exchange, states that he does not think the reduction would interfere with local building. The discussion appears to be entirely friendly.

Los Angeles and Vicinity.

The Salvation Army has arranged details for erecting a new Young Woman's Boarding Home, to be located at Sixth and Boylston streets. The total cost including equipment will be about $500,000.

The South Broadway Building Co., a subsidiary of the Famous Players-Laskey Film Corporation, will erect a six-story loft building at 549-51 South Broadway at a cost of $500,000.

The former Mathis Brewing Plant, at 1834 N. Main Street, is being remodeled at a cost of $1,000,000 by the Imperial Cotton Mills Company. The contract for remodeling the building has been awarded to the Moran Company, 206 Kerchoff Building, industrial engineers. It will be converted into a modern textile mill.

The Columbia Outfitting Company has purchased the northwest corner of Ninth and Broadway, and will erect a ten-story store building.

A synagogue to cost approximately $100,000, will be erected by Temple Emanu El congregation on Manhattan Place near Wilshire Boulevard.

An apartment house project involving a total expenditure of $5,000,000 will be launched in Los Angeles this month. The first unit of this group will be erected on Wilshire Boulevard and Carondelet Street, at a cost of $500,000. This building will be six stories and basement and will contain two hundred and eighty-eight rooms divided into one hundred and thirty-two apartments.

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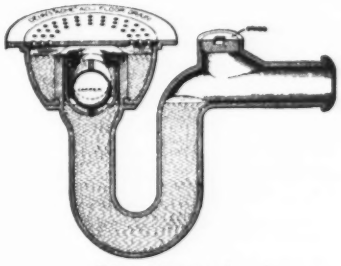

Fig. 7—Patented

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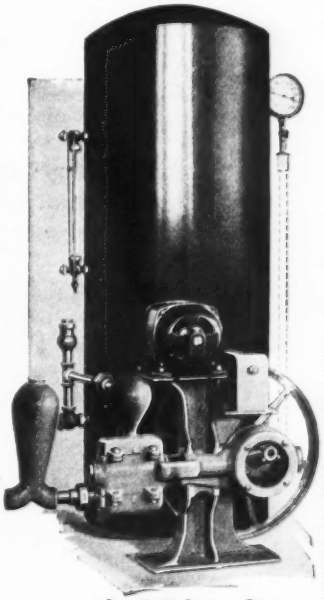

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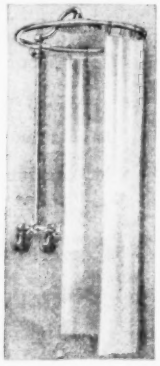

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W. N. Katz, 4362 West Third Street, Los Angeles, has secured the contracts for the installation of plumbing in B. Singer's four-store and flat building at Moneta and 52nd Avenues; Robert Nimma's three-store and flat building at 5278 Hollywood Boulevard; a four-unit bungalow at 1857 Cordova Street; H. Lew Zuckermann's four-store and 16-apartment building at 225 South Western Avenue, and in S. Goodman's six-store and flat building at 5611 Hollywood Boulevard.

Indiana

Indianapolis and Vicinity.

A new record for building operations in Indianapolis for one month was established in May and each week this month shows that the increased activity in new home construction is continuing unabated. In addition to the great number of new building there is also a wide and extensive effort at remodeling, alterations and additions, which, although not individually involving a great amount of money, in the total aggregate represents quite a considerable sum. Needless to say, such activity in the building line is providing plenty of business for the plumbing and heating contractors of the city.

Records in the city building department show that during the week of June 9 to 15, inclusive, there were fifty-one permits issued for the construction of new residences, representing an expenditure of about $232,000. During the same period permits were granted for a new $225,000 fireproof warehouse, an $84,000 school, and a $20,000 church.

During the month of May, permits were taken out for the construction of buildings with an aggregate valuation of $3,420,847. This was nearly $1,000,000 in excess of the record of any previous month. In August, 1919, permits were issued for structures with a valuation of $2,601,497, that month holding the high record until the new mark was set. A record number of permits, 1,728, for building operations also were issued in May, the records of the building commissioner show. The number in May, 1921, was 1,015 and the valuation represented by the permits at that time was only $1,550,661. The total valuation represented by the building permits issued in the first five months of this year is $9,803,391. The volume is keeping up and if continued will make June another big month in the city's building construction.

Fort Wayne.

Building operations in Fort Wayne continue to show a steady increase over the preceding year, the records in the city building commissioner's office show. The month of May showed a very substantial gain over May, 1921, and also over April, 1922, and June seems to be keeping up the pace. The gain of May, this year, over May, 1921, was 66.86 per cent. Residential construction operations predominated the month's new building activity, 119 permits being issued for residences and 65 for remodeling and alterations.

Evansville.

With few exceptions the volume of building construction in Evansville is running to residential work and the plumbing and heating contractors and others of the building industry are held to a dizzy pace to keep up with the demand. The outlying sections of the city are teeming with activity in new dwellings, and in the downtown sections there is a great amount of remodeling, alterations and additions. Fifty per cent more permits were issued in Evansville in one week this month than were issued for the entire month of January, the records in the city building commissioner's office show.

The Orth Plumbing Co., of Lafayette, has been awarded the contract for the installation of plumbing and heating systems in a school building which is to be erected at Battle Ground at a cost of about $90,000.

Massachusetts

Boston and Vicinity.

Seven members of the graduating class of the Massachusetts Institute of Technology have been awarded degrees in the commencement exercises in Sanitary Engineering. This is one of the largest numbers in any one year to receive such degrees. Those who were awarded degrees were: James Hale Allen, of Lawrence, Mass.; Warren Every Howland, of Athens, N. Y.; Francis John Lavery, of Worcester, Mass.; Daniel Patrick Moynihan, of Buffalo, N. Y., who also was awarded an A.B. degree; James Avery Stalbird, of Swampscott, Mass.; Harland Ashley Wilbur, of Melrose, Mass.; and Samuel Isadore Zack, of Athol, Mass.

Other Cities in the State.

Master plumbers of Lowell have made recommendations for slight changes in the plumbing requirements whereby the cost of plumbing work may be considerably reduced without affecting the health provisions. These changes have been approved by the health board and are now in the hands of the city solicitor for such changes in the ordinances as may be required.

It is probable that a separate heating plant will be installed for the Currier school in Haverhill and that the rooms now occupied as toilets will be also placed in a separate building to give additional room to the school when contracts for the remodeling of the structure are awarded.

The O'Leary Plumbing Co., of Holyoke, has been awarded the contract for the plumbing work at High and Division Streets, Holyoke, for the Waldorf Lunch Co.

The new concern of George Starbuck & Sons, Inc., in Turners Falls, has commenced business in the plumbing and heating line. The capital is $30,000, each of the incorporators taking 100 shares. They are George Starbuck, president; Joseph N. Starbuck, secretary; and George W. Starbuck, treasurer. They have taken over the building at 111-115 Avenue A representing 60 shares; the merchandise on hand represents 190 shares and bills receivable of the old firm represent 50 shares.

Bids have been received for the construction of the new high school in Revere. The committee took the bids under advisement and contracts will probably be awarded within a few days. The heating and ventilating bids were: Huey Bros., Boston, $32,223; McMurrer Co., Boston, $32,500; the Heating, Power & Ventilating Co., Boston, $36,625; J. J. Hurley & Co., Boston, $37,268; Scofield & Campbell, Boston, $38,688; Ingalls & Kendricken, Inc., $40,150; Stone & Underhill, $41,978. The plumbing bids were all rejected and will be readvertised at the suggestion of Architect Edward I. Wilson.

The city of Woburn is to install new plumbing in the Rumford school for which $7,500 has been appropriated. Bids will soon be advertised for.

A special committee of the city government of Pittsfield will recommend the construction of a public comfort station at once on the Common, for both men and women. Recommendation is also made that a similar station be established at some other central point. Repairs are also to be made to the existing comfort station. The city council will be asked to make an appropriation for the three projects at its next meeting so that work may be done this summer.

James J. Dowd & Co., of Holyoke, have been awarded the plumbing contracts for the two new state hospital buildings at Belchertown, the contracts amounting to $32,000.

Antiquated heating systems in some of the Brockton schools are to be replaced by modern steam heating plants. There are 17 schools requiring the new plants and the total cost will be $140,000. It is not probable that all of the

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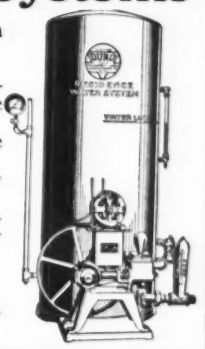
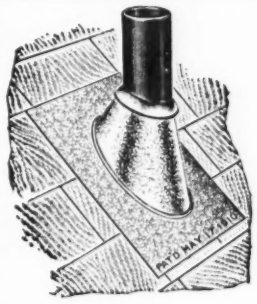


Manufactured by

The Duro Pump & Manufacturing Co.
Dayton, Ohio



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With Ordinary Roof Flashings

Specify and Use the Reliable

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Made in
All Lead—Copper—Galvanized Iron

Every Flashing Adjustable
Every Flashing Perfect

Manufactured only by

Simplex Mfg. Company, 213 W. Austin Ave., Chicago

Canadian Representative:
W. H. Cunningham & Hill, Ltd., Toronto, Ont.

"Mon-Seal"

CHICAGO POTTERY CO.

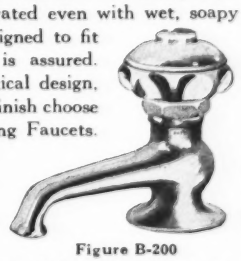
Specializes
in the manufacture of

Closet Bowls and Tanks
of "Whitest Vitrified China"

1924-40 CLYBOURN AVENUE
CHICAGO

Paragon Self-Closing Work

THE Paragon Crown Handle Self-Closing Basin Cock is easily operated even with wet, soapy hands. Note how handle is designed to fit the finger tips—a perfect grip is assured. For mechanical perfection, practical design, first class workmanship and fine finish choose Paragon Ball Bearing Self-Closing Faucets. They are made with all styles of handles. *Sold by all leading Jobbers.*



The Vulcan Brass Mfg. Co.
Cleveland, Ohio

Figure B-200

Eastern Representative: Melvin A. Rosenberg, 108-10 W. 34th St., New York City

Ofeldt

Gas-Fired Steam Boilers

Manufactured by

The Ofeldt Gas-Fired Boiler Co., Inc.

Nyack, N. Y.

YAGER'S

Trade-Mark Registered

Soldering Salts

Buy it of your jobber in ½-lb., 1-lb. and 5-lb. blue and white enameled cans; also 50-lb. cans.

Write for prices

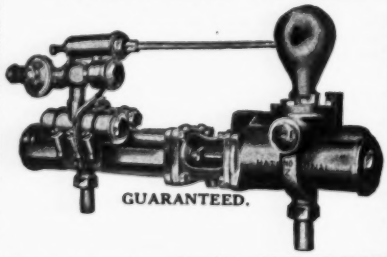
ALEX. R. BENSON COMPANY, Inc.

HUDSON NEW YORK

Fourteen Years of Pump Manufacturing

ARE BACK OF

National Water Lifts

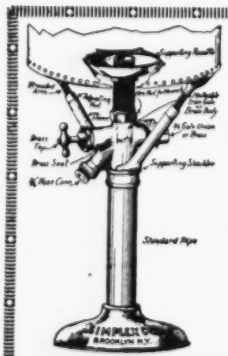


GUARANTEED.

Simplicity is the keynote in the design and operating principle of these lifts. Every working part accessible from the outside. Noiseless in operation. Valves easily removable by taking off caps. Efficient strainer for soft water. Made of best quality bronze.

Ask your jobber

National Water Lift Co. 1621 Portage Street Kalamazoo, Mich.



Simplex Boiler Stand

Made in Malleable Iron or Brass

Stronger, gives larger circulating opening than cast iron stands.

Will carry twenty sizes of boilers. Supporting arms easily attached to all sizes.

Adjustable to any height.

The SIMPLEX costs less in labor, saves leaks—no place for dust or vermin to collect.

Write for Circulars

SIMPLEX BOILER STAND CO. 240 Hall Street Brooklyn, N. Y.

work will be done this year but that a start will be made. Plans for the new system have been prepared by Ralph P. Jackson, superintendent of public property.

The R. D. Kimball Co. has prepared plans for a new heating plant for the Centre Junior High school in Medford, to cost $12,000, and bids will soon be invited by the Schoolhouse Building Commission, Cuthbert H. Lowell, of Medford, chairman.

Bids for the New Bedford comfort station have been opened and the committee has recommended that the contracts be awarded the low bidders in each case. The bids for heating were: Wood-Brightman Co., $1,887; James N. Conway, $1,898. The plumbing bids were: Wood-Brightman Co., $5,150; Jeremiah Cohalan, $5,341; E. P. Hirst Co., $6,496; Standard Heating & Plumbing Co., $7,264.

Hartford.

J. T. Murray, 99 Main Street, Hartford, has been awarded the contracts for the plumbing in the 12-apartment block on Vine Street, for Frank Thomas; and also in the 4-stores and 21-apartment block on Main Street, for Kaplan & Goldberg, 54 Church Street, Hartford.

Otto Epstein, Inc., 18 Elm Street, Hartford, has the plumbing contract; and J. H. Wall, 244 High Street, Hartford, the contract for the heating, in the large new residence for O. L. Hanson, on Beverly Road, West Hartford, Conn.

Hanlon & Murphy, 538 Asylum Street, Hartford, and Libby & Blinn, Inc., 164 State Street, Hartford, Conn., have the plumbing and heating contracts, respectively, on a new residence for Alfred H. Ames, on Bloomfield Street.

O. J. Hjerpe, 131 Whiting Lane, West Hartford, has the contract for the plumbing and heating, in the two new 14-room houses to be built on the Boulevard in West Hartford, for C. E. Larson.

Libby & Blinn, Inc., 164 State Street, Hartford, have been awarded the contract for the hot-water heating and plumbing in the new residence on West Hill, West Hartford, for Frederick J. Bliss.

Arthur MacElroy & Co., 1230 Main Street, Hartford, have received the contract for the plumbing and heating in the large 12-room residence in West Hartford, for Matthew D. Whalen, of 620 Wethersfield Avenue.

Simon & Rutt, 100 Edwards Street, Hartford, heating contractors, have dissolved partnership, and the business will be carried on at the same address by Rubin Simon. The firm has many contracts on hand at the present time.

A. Epstein & Son, 569 Front Street, Hartford, have secured the contract for the plumbing work in a new apartment block to contain twelve apartments, on Sargent Street, for Kaplan & Strousch.

The partnership of Murphy & Sheehy, which has been engaged in the plumbing and heating business in Hartford for a number of years, has been incorporated under the name of Murphy & Sheehy, Inc. The capital stock of the new corporation is $50,000, and it commences business with a paid in capital of $13,500. The incorporators are John W. Murphy, Emma F. Murphy, Martin T. Sheehy and Mary M. Sheehy.

Other Cities in the State.

C. W. Carlson, 219 Ann Street, Bridgeport, has received the plumbing and heating contracts in the extensive alterations and in an addition to the residence of Joseph Ciglar, on the Boston Post Road, Fairfield, Conn.

Joseph Mullins & Co., 945 East Main Street, Bridgeport, has been awarded the plumbing and heating contracts on the new residence of Frank S. Cone, on Post Road, Fairfield.

The firm of Johnson & Little, 11 Chestnut Street, South Manchester, has just been formed by Simon Johnson and Samuel Little, to take over the plumbing business formerly conducted by Mr. Johnson.

George P. Farren, plumber, of New Haven, has filed a petition in bankruptcy in the U. S. District Court at New Haven. The statement shows liabilities of $7,804.09, and assets of $7,696.72.

The Lewis W. Lee Co., 107 Water Street, New Haven, has secured the contracts for the heating and plumbing on the new residence in Whitneyville, New Haven, for Prof. Fred Fairchild, of Yale.

J. J. Keefe, 73 Central Street, Ansonia, has been awarded the contract for the plumbing and heating in the new Italian Baptist Church building on Central Street, that city.

William B. Dickson, Boston Post Road, Westport, has received the plumbing and steam heating contracts on the new $250,000 Y. M. C. A. building to be erected on Hotel Square, Westport, by E. T. Bedford, of Greens Farms, Conn., and New York.

D. H. Kelly, 36 Elizabeth Street, Derby, has been awarded the contract for the plumbing and heating in the new $50,000 grammar schoolhouse on Smith Street, in that city.

BRITISH COLUMBIA.

Vancouver.

Practically all local firms report marked activity, the building season now being well advanced. In some quarters, it is stated that high prices of materials are continuing to militate against a real boom, but on the whole the season is proving quite up to expectations. Building permits have been particularly promising, though in not a few cases, actual building has been held up in the hope that further reductions in prices would occur. While most of the new work under way is confined to dwellings, the operations are marked this year by a somewhat larger proportion of store and office overhauling than has been usual.

Permits for the first nineteen days in June show a total of $250,730.

The city council has definitely decided to grant a franchise for the establishment of a central heating plant. Two firms have submitted applications.

Other Cities in the Province.

At Kerrisdale forty permits for building in nineteen days mean an expenditure of $250,000.

Lynn Valley has decided to expend $60,000 on a new water system. The plans call for the replacement of half-inch pipes with four-inch mains.

At North Vancouver it has been decided by vote of the ratepayers to spend $93,000 on a new school. An extension of the sewerage system at a cost of $9,000 is to be carried out at once.

At Point Grey building permits for the first seven days of June reached $125,000—a new record.

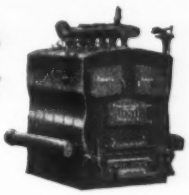
At Duncan, where a building permit system was recently installed, applications for permission to build already filed show a total of $21,255.

At Saanich, completed figures show a total of $21,890 for May building permits as compared with $25,902 in May, 1921.

At White Rock a new theater and a number of cottages are being erected.

At Ladysmith officials declare that present building activity is the most marked in the history of the town. Structures being erected include a number of stores.

Pierce Smokeless Updraft Boiler



CAPACITIES
From 1400 to 10,000 Steam
From 2325 to 16,650 Water

Order from us or through your local jobber

Pierce, Butler & Pierce Manufacturing Corp.
Brooklyn, Boston, Worcester, NEW YORK, Detroit, Syracuse, Newark, Philadelphia, Baltimore, Washington

Every Plumber Should Know This!

Your profit on a Paul installation goes into your bank account—not into "free service" on pump adjustments and repairs. The sale of an undependable water-system can cost you more than you make.
Paul Systems are built to operate without attention except occasional oiling—*and they are absolutely* FOOL-PROOF. Send for the free Paul Service Manual, learn how to make more permanent profits on your water system business.

Write for your copy today! It's free

Ft. Wayne Engineering & Mfg. Co
1706 N. Harrison St., Ft. Wayne, Ind.

Service Offices, carrying systems in stock: New York, Philadelphia, Boston, Minneapolis, Portland, Ore., Kansas City, Mo. Also service offices at Buffalo, Providence, R. I., Pontiac, Mich., Peoria, Ill., Madison, Wis., Wilson, N. C., Omaha, Neb.

WATER PAUL SYSTEMS

There is a Paul Water System to meet all requirements of any capacity, pumping from shallow or deep well, cistern or spring.

NO ROOF IS SUPERIOR TO ITS FLANGE

Therefore, some PLUMBER is the father of every leaky roof.

The Bullard Roof Flange

is acknowledged as the only PERFECT FLANGE by busy men who have made satisfying installations.

THE BULLARD SPECIALTY CO., Tiffin, Ohio

M.-V. B.

Closet Tank fittings are not the cheapest and are used by Manufacturers who want the best.

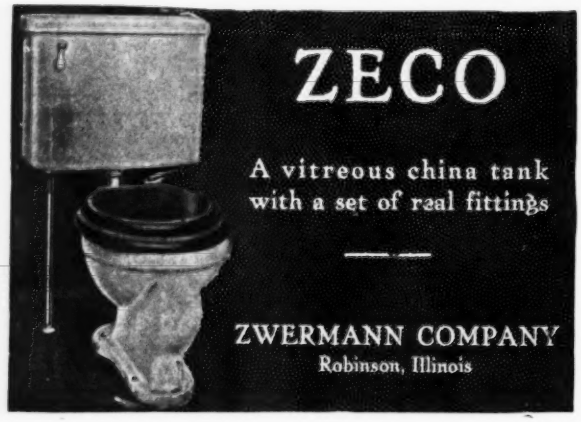
LOOK IN THE TANK

Ballcocks, Flush Valves, Hinges, Flush Levers, Etc.

Morency-Van Buren Mfg. Co.
Sturgis - - Michigan

FOR lasting quality and true capacity use "Koven" Pure Iron Double Row Riveted, Galvanized Range Boilers, or Naco Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

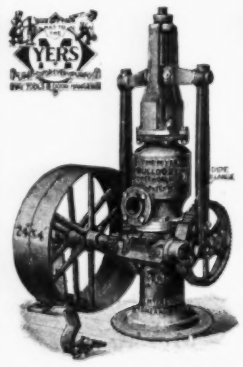
L. O. KOVEN & BRO.
154 Ogden Ave., - - Jersey City, N. J.



ZECO

A vitreous china tank with a set of real fittings

ZWERMANN COMPANY
Robinson, Illinois



Myers Power Pumps

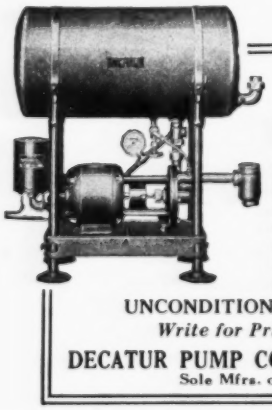
Great strength and ample lifting power are essentials where water is pumped from deep wells or forced against heavy pressure.

In MYERS BULLDOZER POWER WORKING HEADS—all styles—the power is applied direct to the piston through double pinions, gears and side arms thus insuring great lifting power with a minimum of side motion and strain which reduces wear and breakage.

Simplicity of construction with but few working parts adds to the life of Myers Pumps and makes them exceptionally desirable where severe service is necessary.

Our No. PP20 Catalog shows the entire line of Myers Power Pumps—Let us mail you a copy and quote.

The F. E. Myers & Bro. Co.
Ashland, Ohio



DECATUR

FIG. 300

Water Supply System

Comes completely assembled and tested as shown. No parts to wear and get out of order causing trouble and expense to user and dealer. It Stays Sold. First Profits are all Profits.

UNCONDITIONALLY GUARANTEED
Write for Prices and Discounts
DECATUR PUMP COMPANY, Decatur, Ill.
Sole Mfrs. of the Burks Pump

LEGAL QUESTIONNAIRE.

(Continued from Page 14.)

No such extension shall be made for delay occurring more than seven days before claim therefor is made in writing to the architect. In the case of a continuing cause of delay, only one claim is necessary."

While this paragraph just above provides for work done under the supervision of an architect, it might be changed to meet your kind of a situation. It is particularly good in that it gives the contractor an opportunity to persuade the architect that a delay is unavoidable, which leaves a wide-open field for excuses.

If you think well of arbitration, rather than a suit in court for damages, there is a provision in the Standard Form of Contract, Article 45, which might be changed to meet your case. It is long, and so I shall not set it out here because of a lack of space.

With regard to the specification referred to in your second and third paragraphs, it might be well to use the phrase "plans and specifications," and then cross out the word plans in any case where there are no plans. It might be well also, to require that the plans and specifications be signed by both parties on all pages, as identification marks. This is frequently done.

Article 35, quoted above, regarding "Delays" is almost a necessary provision, if a stipulated time for completion appears in any of your contracts.

Design Patents.

Generally speaking, the law relating to such patents does not materially differ from that which governs as to mechanical patents, and all the regulations and provisions which apply to the obtaining or protection of patents for inventions or discoveries are made applicable to patents for designs. The right to acquire a design patent is extended by the statutes to "any person who has invented any new, original, and ornamental design for an article of manufacture, not known or used by others in this country before his invention thereof, and not patented or described in any printed publication in this or any foreign country before his invention thereof."

The very terms of the act and their implication render anticipation inimical to the validity of the patent, for the invention must be new, original, and ornamental, not known or used by others, and not patented or described in any printed publication. If so known, used, patented, or described, of course, there is anticipation. So that the rule of law respecting anticipation in utility patents must apply as well to design patents and with like effect. The result obtained must not only be new, as in utility patents, but it must be also original, that is, having its primary conception in the mind of the inventor; and, further, it must be ornamental. This means it must possess the elements of beauty and attractiveness; and in all this there must be invention of design, which reaches beyond the exercise of mere mechanical skill.

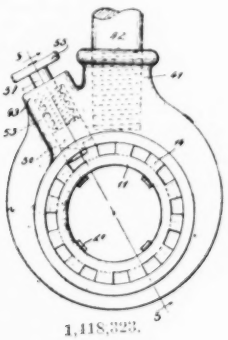
The design which is the subject of patent appeals to the eye. The quest is for the beautiful and attractive, as well as the ornamental, and the test is the æsthetic effect.—United States Circuit Court of Appeals, Ninth Circuit, in Majestic Electric Development Co. v. Westinghouse Electric & Mfg Co., 276 Federal Reporter, 676.

James T. O'Connor, of New Britain, Conn., has been appointed a member of the Board of Compensation and Assessment of that city. Mr. O'Connor is a member of the plumbing and heating firm of Parker & O'Connor and is appointed for one year, succeeding Henry S. Tallard, resigned. His appointment follows close upon the heels of the appointment of his partner, Edwin A. Parker, to the police commission.

Patents

Heating Department.

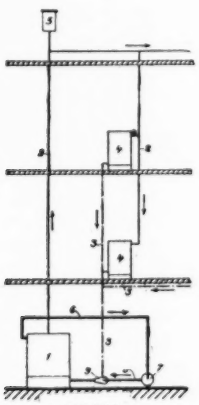
1,418,323. Diestock. Ira W. Nonneman, Warren, Ohio, assignor to The Borden Company, Warren, Ohio. The combination of a head having a sleeve, an oscillating driving device surrounding the sleeve and having a ratchet engagement therewith, said head having radial notches, chasers occupying said notches, a ring secured to the end of the head, and means comprising a rib on said ring engaging the outer



1,418,323.

faces of the chasers, and projections extending from the frame and engaging openings in the inner faces of the chasers whereby the chasers are engaged and held at both their outer and inner edges by the ring and head.

1,418,583. Hot-Water Heating System. Alexander Rudolf Maximilian Lincke, Zurich, and Otto Lincke, Oerlikon, near Zurich, Switzerland. A hot water heating system, comprising in combination, a heating conduit including radiators and a boiler, a separate conduit having a suction branch and a



1,418,583

pressure branch, said suction-branch being connected to said boiler, a motor driven accelerating device interposed between the branches of the separate conduit, and an injector connecting the pressure branch of the separate conduit to the heating conduit to accelerate the feed of the heating water without destroying the gravity action of the water to the heating conduit.

1,418,835. Heating System. William H. Schoonmaker, Montclair, N. J. In a heating system, the combination of a distributing conduit, means for supplying steam thereto comprising a boiler, said boiler having a controlling damper,

ACME DETROIT Drinking Fountain

Adjustable to All Pressures

A strictly sanitary fixture suitable for use in all classes of buildings. The price is right, too.

We make a line of high grade

Basin Cocks — Wash Tray Bibbs
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If your jobber hasn't our goods in stock write us, giving his name.

Acme Brass Works, Detroit, Mich.

Eastern Representatives: Kessel & Muller, New York
Western Representative: H. E. Crum Jr., 79 W. Monroe St., Chicago, Ill.

AMERICAN BENT TUBE SINK TRAP

With Cast Brass Female Iron Pipe Outlet

This trap makes a satisfactory job wherever it is installed.

Furnished either rough nickel plated or finished nickel plated, in 1¼ and 1½ inch sizes.

American traps are made in a variety of up-to-date designs.

Your jobber can supply you.

Fig. 2386

American Sanitary Mfg. Co.
ABINGDON, ILLINOIS
Manufacturers of Fine N. P. Brass Specialties

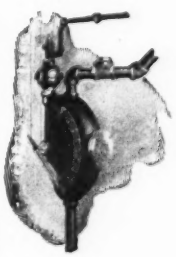
Plate Specialists
FOR THE PAST 30 YEARS

We take care of your wants

Plates in all sizes and styles. Send us your order for prompt, or future delivery and be ready for the rush.

No. 10 Steel

THE BEATON & CORBIN MFG. CO.
SOUTHINGTON, CONN.
The Old Original Company



The
WILEY SAFETY VENT VAPOR REGULATOR

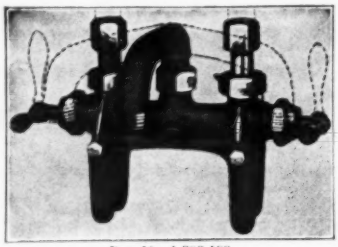
Provides the best

LIFE AND ACCIDENT INSURANCE for your vapor heating boiler

A peerless quality product manufactured and sold exclusively by

The Simplex Heating Specialty Co., Inc.
Lynchburg, Va.

Introducing the
E-Z Laundry Tray Faucet



Prominent Features of E-Z LAUNDRY TRAY FAUCETS are:
Made entirely of brass.
Easy to install.
No assembling necessary.
Quick compression valves.
½ in. unions attached.
Ready for installation.
Made for two or three part tub. Easy to sell with every laundry installation.

Pat. No. 1,393,103

Write for details

The E-Z Manufacturing Co. 714 Builders' Exchange Minneapolis, Minn.

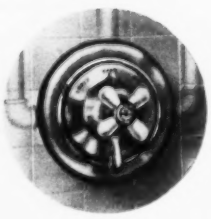
A Good "Sales-Clincher"

OFTEN, when a heating plant sale is in doubt, the Minneapolis Heat Regulator saves the sale. It positively insures a better heated home at lower fuel cost. Should be installed on every heating system. The logical time is when you install the system. Sell the job complete.

Quickly installed on any type of heating plant using any kind of fuel.

MINNEAPOLIS HEAT REGULATOR CO.
2801 Fourth Ave. So.
Minneapolis, Minn.

THE IDEAL SHOWER
FOR CHILDREN



The "LEONARD" Thermostatic Water Mixing Valve can be set so range of temperature is limited to tepid or warm.

If either supply fails entirely, the other is shut off automatically.

Sold by all jobbers.

LEONARD-ROOKE CO. Providence, R. I.

Lead Goods
for Plumbers and Water Works

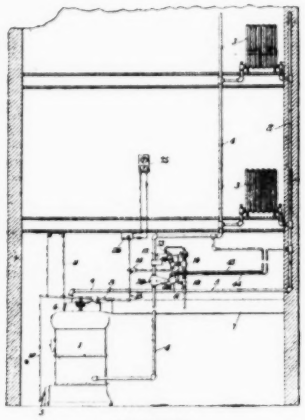
Manufactured by

RAYMOND LEAD WORKS

General Office and Plant
735 South Washtenaw Ave. CHICAGO

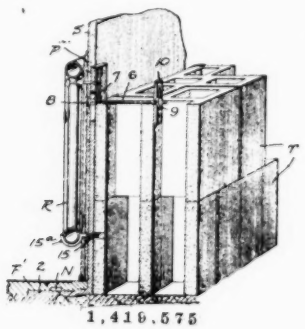
SUPERIOR TO ANY PRODUCED
SERVICE PROMPT AND EFFICIENT

a suction producing means, an air-withdrawal conduit including a valve casing connected to said distributing conduit, a valve arranged within the valve casing and having associated therewith a thermostatic operating means controlled by the temperature of the fluid in said valve casing, control means for said suction producing means operated by said thermo-



1,418,835.

static operating means, means for starting said suction producing means in operation when said damper is adjusted to cause increased action in the boiler and for stopping the operation of said suction producing means when said damper is adjusted to cause decreased action in the boiler and an independent means for controlling the actions of said suction producing means in accordance with pressure variations between predetermined limits in the distributing conduit.



1,419,575

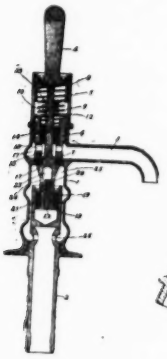
1,419,575. Wall-Radiator Support. Antone Lettich, San Francisco, Calif. A support for mounting a wall radiator in elevated position above a floor, comprising a standard having a floor foot and having an upright slotted shank, an interlocking member adapted to be embedded in a wall as it is erected, means for fastening said member to the upper end of the shank through the slot, and attachments applicable to the shank, after the wall surface has been finished over the shank, to mount the radiator.

Plumbing Department.

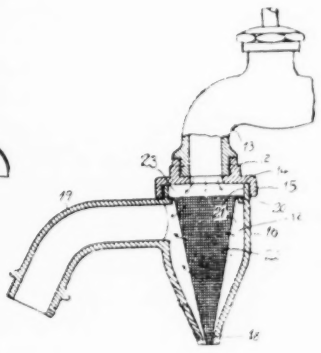
1,418,664. Self-Closing Faucet. John McNeil, Cincinnati, Ohio, assignor to The John Douglas Company, Cincinnati, Ohio. A faucet comprising a casing having inlet and discharge passages, a cup having an imperforate bottom and being in the inlet passage and in axial alignment with the casing, a valve in the casing, a valve plunger at the lower end of the valve and engaging the inner walls of the cup, said plunger having an internal passage and a port at the lower end of the passage forming communication between the passage and the inside of the cup, and a port at the upper end of the passage forming communication with the inlet pas-

sage, a pin located within the passage in the plunger, and adapted to seat against the wall surrounding the port in the bottom thereof.

1,418,785. Filter. William E. Gallagher, Framingham, Mass. In combination, a faucet having an enlargement at its discharge end of greater diameter than the bore of the faucet, and provided with a screw thread, a tubular casing having an enlarged end portion, screw-threaded to engage the thread on said enlargement, a tapering end portion forming a contracted sediment outlet, an internal strainer rest located below said enlargement, and a lateral nozzle below said strainer rest, the faucet enlargement, the enlarged end of the casing, and

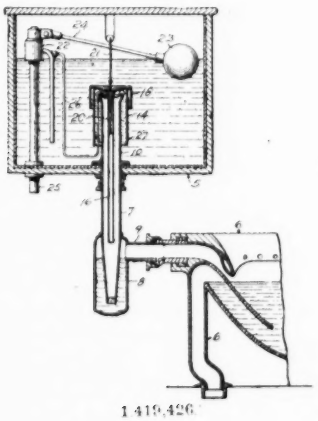


1,418,664



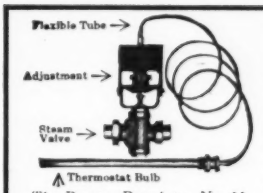
1,418,785

the strainer rest forming a steam-spreading space of greater diameter than the bore of the faucet, and a frusto-conical strainer seated at its larger end on said rest and extending therefrom into said sediment outlet, the larger end of the strainer being of greater diameter than the bore of the faucet, and adapted to receive from said stream-spreading space a stream of water, the pressure of which is reduced to prevent an objectionably forcible discharge through the sediment outlet.



1,419,426

1,419,426. Flushing Device for Closets. Edward Thiry, Pasadena, Calif. In combination with a flush tank, a discharge tube extending upwardly into said tank, said tube being open at the top thereof, a water trap connected to the lower end of said tube, a siphon bell nesting over said tube, said tube and bell being arranged so that the tube and interior of the bell communicate, said bell being dished at the top, an air tube secured to said bell extending into said discharge tube and communicating with the dome thereof at the low point of the dished surface, and a control bell nesting over said siphon bell.



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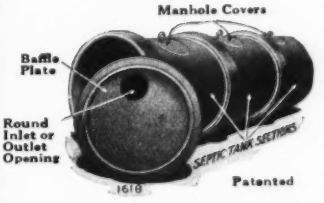

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Books for Your Trade Library

SANITARY SEWERAGE OF BUILDINGS. By Thomas S. Ainge. Beginning with a study of outside sewers, this book goes fully into the best practice in inside connections, proper location and size of soil, waste, and vent pipes and the roughing-in test up to the filling in of the trenches. 40 pages are devoted to the important subject of traps. Sewage disposal for country homes is also given full consideration. Size 5½x8 in. 200 pages. Cloth. Price, $1.50.

PRACTICAL STEAM AND HOT WATER HEATING AND VENTILATING. By Alfred G. King. This book should be in every steamfitter's library. A strictly up-to-date work, describing various systems of heating and ventilation. Besides the technical features, it contains hints on securing contracts, business methods, shop practice, rules and data for estimating radiation and figuring costs, and other tables and suggestions that are time savers. Size 6x9 in. 368 pages, 300 detailed illustrations. Cloth. Price, $3.50.

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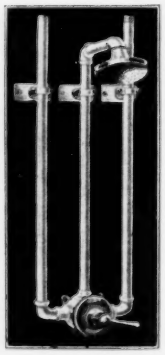

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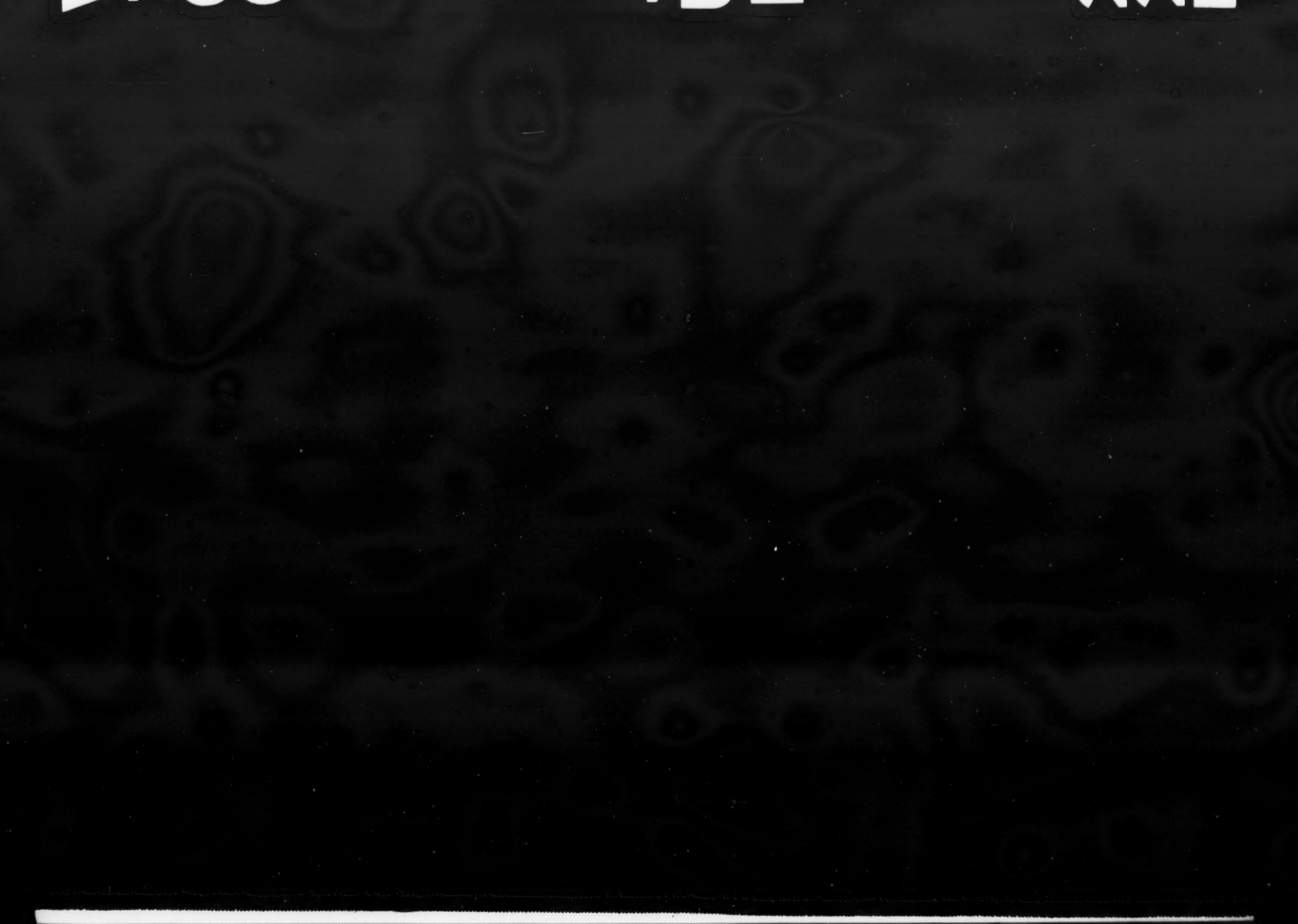
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